

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 MAN 11,1 p 1

7. Edition

En

Testoil-ISO 4113

FES 6 A 95 D 410 LS 2542 Z RQV 250-1100 AB 1038 DL (1)
 .. LS 2542 RQ 250/1100 AB 1049 DL (2)
 .. IS 2542 RQ 250/1050 AB 965 DL (3)
 Komb.-Nr. 0 400 846 425 (1) MAN-Nr. 1-7960
 0 400 846 427 (2) MAN-Nr. 1-7946
 0 400 846 418 (3) MAN-Nr. 1-7941

supersedes 7.84

company: MAN

engine: D2566

(1) MSFV-162 kW/2200 min/1

(2) MFOR-162 kW/2200 min/1

(3) MF -172 kW/2100 min/1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60
 (1,45-1,65) mm (from BDC) Cyl. 6

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	11,3+0,1	11,3 - 11,5	0,3(0,6)	12,0-12,1	12,9 - 13,1	n 1050
250	5,9-6,1	0,8 - 1,5	0,3(0,5)	6,5-6,7	1,1 - 1,7	

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

(1)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1140	14,4-17,6	-	-	-	ca. 13	100	min. 7,5	200	0,5-1,2
							250	5,9-6,1	700	4,3-4,6
							320-380	=2,0	1140	8,3
							450	0-1		
ca. 42	10,3	1140-1150				3a				
	4,0	1175-1205								
	1300	0 - 1,0								

Torque control travel a = 0,35 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9+0,1
1100	112,5-114,5 (110,5-116,5)	1140-1150*	700	102,5-105,5 (100,5-107,5)	100	124,0-134,0	1100	11,3
			500	max. 106,5 (108,5)	250	6,0 mm RW	700	11,7
						100-170 (80-190)	500	11,7

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

(2)

MAN 11,1 p 1

- 2 - ②

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	10,2	1145-1160	250	6,0	100	min.7,5	1100	11,2-11,3
				4,0	1185-1215			250	5,9-6,1	845	11,2-11,5
								360-400	=2,0	750	11,4-11,6
										600	11,6-11,7

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /- 1000 strokes	rev/min	rev/min	cm ³ /- 1000 strokes	rev/min	cm ³ /1000 strokes / mm	Control rod travel
1	2	3	4	5	6	7	
(2) 1100	112,5 - 114,5 (110,5 - 116,5)		700	102,5 - 105,5 (100,5 - 107,5)	100	125,0-135,0 (122,0-138,0) = 15,0-16,0mmRW	
			500	max. 106,5 (max. 108,5)	250	6,0 mm RW	

Checking values in brackets

B. Governor Settings

(3)

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	11,0	1095-1110	250	6,6	100	min. 8,1	-	-
				4,0	1145-1170			250	6,5-6,7		
								375-415	=2,0		
1250	0 - 1							450	0 - 1		

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /- 1000 strokes	rev/min	rev/min	cm ³ /- 1000 strokes	rev/min	cm ³ /1000 strokes / mm	Control rod travel
1	2	3	4	5	6	7	
(3) 1050	127,5 - 129,5 (125,5 - 131,5)		500	max. 113,5 (115,5)	100	124,0 - 134,0 6,0 mm RW	

En Checking values in brackets

Test Specifications

Fuel Injection Pumps ① WPP 001/4 MAN 16,0 d

and Governors

9. Edition

En

Testoil-ISO 4113

PE10A90D520/5 LS 2515

RQV 250-1250 AB993DR

supersedes 3.85

RQ 250/1250 AB832DR ./.

company: MAN

RQ 250/1250 AB992DR ./.

engine: D 2530 MF

 10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2
 0 -45-72-117-144-189-216-261-288-333⁰ $\pm 0,5^0(0,75^0)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\overset{1,50-1,60}{(1,45-1,65)}$ mm (from BDC) Cyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,5-11,6	10,2 - 10,3	0,3(0,45)	11,5-11,6	10,3 - 10,4	
250	7,4-7,6	0,9 - 1,5	0,2(0,4)	7,4-7,6	0,9 - 1,5	
800/500	- - -	C, 4-5 -	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in
Testoil-ISO 4113

B. Governor Settings

RQV..993 DR

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1275	14,4-17,4	-	-	-	ca.13	100	min.7,2	200	0,5-1,2
- - -	- - -	- - -	-	-	-	-	250	5,6-5,8	700	4,4-4,8
ca.48	10,5	1290-1300	-	-	-	-	310-370	= 2,0	270	8,3
- - -	4,0	1365-1395	-	-	-	-	450	0 - 1		
	1450	0 - 1,0				③a				

Torque control travel a = 0,6+0,1 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1250	102,5-103,5 (100,5-105,5)	1290 - 1300*	800	95,5- 98,5 (93,5-100,5)	100	135,0-145,0	1250	11,5+0,1
			500	90,0- 94,0 (88,0- 96,0)	250	7,0 mm RW	900	11,9+0,3
					100-170 (80-190)		500	12,3+0,1
								./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

MAN 16,0 d
RQ..832 DR

- 2 -

②

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	10,5	1295-1310	250	6,1	100	min.7,6	-	-
				4,0	1345-1375			250	6,0-6,2		
				1500	0 - 1,0			360-420	=2,0		
								500	0 - 1		

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation At 1295-1310 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /- 1000 strokes	rev/min		rev/min	cm ³ /- 1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3		4	5	6	7
1250	101,5 - 102,5 (99,5 - 104,5)			500	78,0 - 86,0 (76,0 - 88,0)	100	129,25 - 139,25
						250	7 mm RW

Checking values in brackets

B. Governor Settings

RQ..992 DR

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	10,5	1295-1310	250	6,0	100	min.7,5	1250	11,5-11,6
				4,0	1365-1395			250	5,9-6,1	1000	11,8-12,0
				1500	0 - 1,0			360-400	=2,0	600	12,2-12,4
								500	0 - 1		

Torque-control travel on flyweight assembly dimension a = 0,25 mm

Speed regulation At 1295-1310 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /- 1000 strokes	rev/min		rev/min	cm ³ /- 1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3		4	5	6	7
1250	102,5 - 103,5 (100,5 - 105,5)		-	800	95,5 - 98,5 (93,5 - 100,5)	100	135,0-145,0 (132,0-148,0) = 18,3-19,3 mm RW
				500	90,0 - 94,0 (88,0 - 96,0)	250	7,0 mm RW

En Checking values in brackets

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

WPP001/4KHD111

2. Ausgabe

En

Testoil-ISO 4113

PES6A80D410/3 RS2527

RQV 300-1400AB951DL (1-2)

RQ.. 935DL (3-6)

supersedes 80

company KHD

engine F6L912/913

Hinweise für Pos. 2 und 6 Seite 4!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	12,0+0,1	6,8 - 7,0	0,2(0,35)			
300	8,0-8,2	0,9 - 1,5	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RQV 300-1400 AB951DL (1-2)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 68	1470	15,2-17,8	-	-	-	ca. 12	100	min. 7,5	300	0,7-1,3
---	1700	0 - 1					300	5,9-6,1	900	4,0-4,4
ca. 65	11,0	1440-1450					530-590	=2,0	1400	8,3
	4,0	1545-1575					850	0,1		
						410-650				

Torque control travel a = 0,9 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(1) 1400	69,0 - 70,0 (67,5 - 71,5)	1440-1450*	700	64,5 - 66,5 (63,0 - 68,0)	100	17,3-17,6 mm RW	1400 1150 700	12,0-12,1 12,3-12,6 12,8-13,0

Checking values in brackets

* 1 mm less control rod travel than col 2

1.82

B. Governor Settings

KRD111 -2-
RQ300/1400 AB935DL

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
700	19,2-20,8	700	20,0	11,0	1445-1460	300	9,0	100	min.10,5	1400	12,0-12,1
	VH=49°			4,0	1540-1570			300	8,9-9,1	950	12,5-12,8
								590-630	= 2,0	700	13,0-13,2
								750	max.1,0		

Torque-control travel on flyweight assembly dimension a = 0,4 mm Speed regulation At 1445-1460 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3		4	5	6	7
(3)							
1400	69,0 - 70,0 (67,5 - 71,5)			700	64,5 - 66,5 (63,0 - 68,0)		

Checking values in brackets

B. Governor Settings

RQ 300/1325 AB935DL

(4)

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
800	19,2-20,8	800	20,0	10,3	1370-1385	300	9,1	100	min.10,6	1325	11,3-11,4
				4,0	1450-1480			300	9,0-9,2	1000	11,5-11,6
								590-630	= 2,0	750	12,4-12,5
								700	0 - 1		
1350	Abregel- beginn										
1600	0 - 1										

Torque-control travel on flyweight assembly dimension a = 0,4 mm Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3		4	5	6	7
(4)							
1325	55,5 - 56,5 (54,0 - 58,0)			750	51,5 - 54,5 (50,0 - 56,0)	100	119,5 - 129,5

En Checking values in brackets

B. Governor Settings

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
800	19,2-20,8	800	20,0	11,5	1295-1310	300	8,5	100	min.10	1250	12,5-12,6
VH=	49°			4,0	1370-1400			300	8,4-8,6	950	13,0-13,3
								580-750	620 = 2,0 max. 1,0	800	13,5-13,6

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3		4	5	6	7
(5) 1250	66,5 - 67,5 (65,0 - 69,0)	-		800	64,0 - 66,0 (62,5 - 67,5)	-	-

Checking values in brackets

B. Governor Settings

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3		4	5	6	7

En Checking values in brackets

Hinweise:

Bei Pos. 2 - PES 6 A 80 D 410/3 RS 2527 mit RQV 300-1400 AB951DL
und Pos. 6 - PES 6 A 80 D 410/3 RS 2527 mit RQ 300/1250 AB935DL

werden vom Kunden anstelle der Motorleistung teilweise eine Motor-Schlüsselzahl auf dem Typenschild des Motors angegeben.

Diese Motor-Schlüsselzahlen 1025, 1032, 1034, 1035 und 0708 ergeben eine reduzierte Vollastmenge:

n 1250 = 57,5 - 59,5 cm³/1000 H.

n 850 = 55,5 - 57,5 cm³/1000 H.

Ab Motor-Nr. 6216 324 gilt jedoch:

n 1250 = 63,5 - 65,5 cm³/1000 H.

n 850 = 60,5 - 62,5 cm³/1000 H.

Dies ist bei Neueinstellungen und Kontrollmessungen unbedingt zu beachten!

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 5,1 f

1. Edition

En

PES 5 A 80 D 410/3 RS 2347 EP/RS 325/1400 AOB 699 DL
Komb.-Nr. 9 400 093 406
1-3-5-4-2 je $72^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

supersedes -
company KHD
engine F5L 913

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,9-2,0$
 $(1,85-2,05)$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1400	11,2+0,1	6,4-6,5	0,25(0,4)			
325	8,4-8,6	1,0-1,3	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-		325	8,3	1400	11,2-11,3
	x =						300	8,4-9,1	700	11,8-12,1
							400	6,0-6,8	500	11,8-12,1
VHca.60	8,7	1400-1450					550	3,5-4,0		
FHmax.	4,0	1500-1530					1350	2,8-3,2		
2a	1600	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min	cm ³ /1000 strokes	3	4	5	6	7	8	9	
1	2								
1400	64,5-65,5 (63,0-67,0)	1430-1440*	700	57,0-59,0 (56,5-59,5)	100	100,0-140,0	-	-	
			500	54,5-56,5 (53,5-57,5)					

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH

Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
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7.86

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 1 1 4

1. Edition

En

40

PE 10 A 95 D 610/4 LS 2452

RQV 300-1250 AB 1129 L

supersedes -

company: KHD

engine: F 10 L 413 F

228 kW (310 PS)

1 - 10 - 9 - 4 - 3 - 6 - 5 - 8 - 7 - 2

0 - 27 - 72 - 99 - 144-171-216-243-288-315° ± 0,5° (± 0,74°)

All test specifications are valid for Bosch Fuel Injection Pump Test Batches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,0-2,1

(1,95-2,15)

mm (from SDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,3+0,1	9,2 - 9,4	0,3(0,6)			
300	6,4-6,6	1,2 - 1,6	0,3(0,5)			
800	10,5+0,1	C, Sp.4 u. 5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1250	15,2-17,8	-	-	-	ca.14	100 300	min.19,0 6,4- 6,6	250 550 900 1250	1,0-1,2 3,4-3,8 5,4-5,6 8,0
ca.44	9,3 4,0 1475	1290-1300 1365-1395 0 - 1,0				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed ②b limitation intermediate speed 4a	Fuel delivery characteristics 5a high idle speed 5b		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1250	90,5-92,5 (88,5-94,5)	1290-1300*	800	90,0-93,0 (88,0-95,0)	100	119,0-129,0	1250 500 800 950	10,3+0,1 10,5+0,1 10,5+0,1 10,3+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

A10

410

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1.82

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 3,80

1. Edition

En

PES 4 AM 90 D 410 RS 2017

RQV 300-1425 AB 740 L

supersedes -

company: Daimler Benz

engine: OM 314

62,5 kW (85 PS)

1 - 3 - 4 - 2

0 - 90-180-270

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

(1,85-2,05)

RW 10,5 mm

Port closing at prestroke

1,90-2,00

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	9,7-9,8	6,2-6,3	0,3(0,25)			
300	6,8-7,0	0,9-1,5	0,2(0,25)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 68	1425 1650	16,0-19,4 0-1				ca. 10	100 300 570-600 750	min. 7,4 5,9-6,0 =2,0 0 =1,0		
ca. 61	8,7 4,0	1460-1470 1535-1565				③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1400	62,5-63,5 (61,5-64,5)	1460-1470*	100	13,7-14,3 mm RW					
						100-220 (80-240)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.80

Test Specifications

Fuel Injection Pumps ①

and Governors

WPP 001/4 MB5,7w

1. Edition

En

PES 6 AM 90 D 410 RS 2016

RQV 300-1425 AB 740 L

supersedes Daimler-Benz
company: OM 352
engine: 96 kW (130 PS)

1 - 5 - 3 - 6 - 2 - 4 je 60°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

(1,85-2,05)

Port closing at prestroke

1,90-2,00

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 5
1400	9,7-9,8	6,2 - 6,3	0,3(0,25)			
300	6,8-7,0	0,9 - 1,5	0,2(0,25)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1425 1650	16,0-19,4 0 - 1				ca. 10	100 300	min. 7,4 5,8-6,0		
ca. 61	8,7 4,0	1460-1470 1535-1565				3a	570-600 = 2,0 750	0 - 1		

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b)	Fuel delivery characteristics high idle speed (5a)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min (4a)	rev/min	cm³/1000 strokes (5b)	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1400	62,5-63,5 (61,5-64,5)	1460-1470*			100	13,7-14,3 mm RW		
					100-220 (80-240)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.80

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7w7

1. Edition

PES 6 A 90 D 410 RS 25 69

RQV 300-1400 AB 1111L

supersedes

company: Daimler Benz

OM 352

engine: 96 kW (130 PS)

1 - 5 - 3 - 6 - 2 - 4
0 - 60-120-180-240-300

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,20-2,40) mm (from BDC) RW 10,5
2,25-2,35

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,1 +0,1	5,9 - 6,0	0,3(0,45)			
300 500	8,4-8,6 -----	1,0 - 1,6 C.SP. 4-5	0,2(0,4) 0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1400 1630	15,2-17,8 0 - 1,0				ca. 15	100 300 610-670 = 2,0	min. 8,5 8,4-8,6	300 670 1450	1,1 3,9-4,1 8,1
ca. 65	9,1 4,0	1440-1450 1530-1560				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥	Torque-control ⑤ travel Control rod travel mm		
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
1400	59,5-60,5 (57,5-62,5)	1440-1450*	500	51,5-54,5 (49,5-56,5)	100 300	72,25-82,25 15,1- 15,5 mm RW 10,25-16,25	1400 1000 630 500	10,1-10,1 10,4-10,7 11,1-11,3 11,4-11,5

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.81

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4
1. Edition

En

PES 6 A 100 D 410 RS 3026
.. RS 3027

EP/RSV 400-1100 A7B767L (1)
..A28789DL(2)

supersedes
company John Deere
6404A (1)
engine 6466D (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,00-2,10(1,95-2,15)

Port closing at prestroke

1,95-2,05(1,90-2,10) mm (from BDC)

(1) Port closing mark 14 °
after port closing.

(2) Port closing mark 15 °
after port closing.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery (1) cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery (2) cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1070	10,6 +0,1	11,2-11,4	0,3(0,6)	10,8 +0,1	11,0-11,2	
400	6,2-6,4	1,1- 1,5	0,3(0,5)	6,2-6,4	1,0- 1,5	
525/550	- - - -	C 4,5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

(1)

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 5,75				ca.30	400	5,8		
ca.72		1110-1120=9,6 1145-1150=4,0 1250 = 0,3-1,7					100 400 400-500 550	min. 19 6,2-6,4 =2,0 0-1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1070	112,0-114,0 (110,0-116,0)	1110-1120*				100 400 1150 dispersion max.5(6)	156-176 11,5-15,5 11,5-21,5		./.

Checking values in brackets

* 1 mm less control rod travel than col 2

5.79

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The numbers denote the sequence of the tests

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca. 21	400	5,8	1100	10,8-10,9
	x	= 3,5					100	min. 19	800	11,5-11,8
							400	6,2-6,4		
ca. 44		1140-1150=9,7					450-510	=2,0	400	12,7-12,8
2a		1225-1235=4,0					600	0 - 1		
		1350 0,3-1,7								

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limitat.		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to ...)		rev/min		Idle		rev/min	
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA	0,7 bar			LDA	0,7 bar		**		
1100	110,0-112,0 (108,0-114,0)	1140-1150*		525	120,5-123,5 (118,5-125,5)	100	186-206		
LDA	0 bar			1200	23,5- 33,5 (18,5-38,5)	400	11,5-15,5		
550	83,0-89,0 (81,0-91,0)								

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Testing the hydraulic start-locking device

Locking at 0,48 - 0,76 bar

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min increasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel-
	Gauge pressure = bar	Gauge pressure = bar	mm
3027 with 789 DL	0	0,11 0,30 0,68	10,4 - 10,5 10,8 - 10,9 11,8 - 12,0 12,3 - 12,4

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (- maximum full-load control rod travel)

En

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4
1. Edition

En

PES 6 A 100 D 410 LS 3029; RSV 400-1100 A 2 B 2019 DL

supersedes -
company John Deere
engine 6466 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing mark cyl. 1 : 15° after port closing

Port closing at prestroke 1,95-2,05
(1,90-2,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,0	11,5-11,7	0,3(0,5)			
400	6,2	1,0- 1,4	0,3(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control lever deflection in degrees 7 rev/min 8			3 Torque control Control rod travel rev/min mm 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					Control rod travel mm 9				
loose	800 0,3-1,7 x = 3,5					ca. 19	400 6,0		1100 0	
ca. 43	1150 10,0 1200 5,0						100 19,0-21,0 400 6,2 470-530 = 2,0		750 0,75	

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel rev/min mm 8 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7			
LDA 1100	0,70 bar 115,0-117,0 (114,0-118,0)	1145-1155* (1140-1160)		LDA 750 0,70 bar 124,5-127,5 (123,5-128,5) 0 bar 83,0- 89,0 (81,0- 91,0)		100 166-196 400 11,0-15,0 1200 23,5-33,5			

Checking values in brackets

* 1 mm less control rod travel than col 2

10.79

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 550 rev/min decreasing pressure – in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution , difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
3029 with 2019 DL	0,08 - 0,11	0,46 - 0.53	

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

1. Edition

En

PES 6 A 100 D 410 RS 3031 EP/RSV 400-1100 A2 B2046D

supersedes...

company John Deere
engine 6404 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,05 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,1	11,2 - 11,4	0,3			
400	6,5	1,1 - 1,5	0,3			

Port closing mark cyl. 1 : 14° after port closing

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
Loose	800	0,3-1,0				ca. 21	400	6,1	1050	11,1
	x =	3,8					100	19-21		
ca. 42	1095-1105=	11,1					400	6,6	750	12,0
2a	1150	5,0					480-540	2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
Test oil temp 40°C (104 F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1050	1,3 bar 112,0-114,0	1095-1105*		LDA 750	1,3 bar 121,0-125,0	100	156-176		
				LDA 550	0 bar 49,0- 53,0	400	11,5-15,5		
						1150	23,5-33,5		

Checking values in brackets

* 1 mm less control rod travel than col 2
10.79

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Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 550 rev/min decreasing pressure - in bar gauge pressure
~~XXXXXX~~

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
3031 with 2046 D	0,75	0,42	11,1 9,2-9,4
Switching point (hydr. measurement)	0,75	0,45	

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 HAN 10,8 f
3. Edition

En

PE 6 A 100 D 320 RS3030
PE 4 A 95 D 420 RS2556
.. RS2556

EP/RSV 350-1100 A8 B 1119 DR (1)
.. B 1120 DR (2)
.. B 1121 DR (3)

supersedes 12.78
company MF-Hanomag
engine (1 - 0963 A2)
(2-3 - D943)

cyl.6: norm. $\pm 0,50$
cyl.4: 1 - 2 - 4 - 3 - je $90^\circ (\pm 0,75)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,80-1,90 mm (from BDC) RW 10,5 FB.-Diff. RW 9,0 /
(1,75-1,95) RW max. 5,5 - 6,5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,5	15,0-15,2	0,3(0,5)	10,0	8,9-9,7	
	+0,1			+0,1		
350	7,3-7,5	1,3- 1,9	0,3(0,5)	6,7-6,9	1,4-2,0	
700/500		C 4- 5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1119DR (1)

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca. 24	350	5,5	1100	11,5-11,6
	x	5,50					100	min. 19	550	11,5-11,7
							350	5,9-6,1	400	12,7-13,3
ca. 56	10,5	1140-1150					435-495	= 2,0		
	4,0	1190-1220					550	0,1		
2a	1355	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5 Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
(1) 1100	150,0 - 152,0 (148,0 - 154,0)	1140-1150*				100	19 - 21mm	RW	

Checking values in brackets

* 1 mm less control rod travel than col 2

2.81

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A20

A.20

The numbers denote the sequence of the tests

1120DR (2)

-2-

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca.21	350	5,5		± 0,1
	x	4,50					100	min.19		
ca. 52	9,0	1140-1150					350	5,9-6,1	1010	10,5
	4,0	1160-1190					480-540	= 2,0	500	10,9
②a	1350	0,3- 1,7					600	0 - 1		

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle		Control rod travel	
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3		4	5	6	7	8	9
(2)									
1100	93,0-95,0 (91,0-97,0)	1140-1150*		700	100,0-103,0 (98,0-105,0)	100	19-21mmRW		
				500	92,0- 94,0 (90,0- 96,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Cold-start test according to VDT-I-DAF 004, see page 2

1121DR (3)

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca.22	350	6,8		± 0,1
	x =	4,5					100	min.19	1100	9,9
ca. 52	8,9	1140-1150					350	7,2-7,4	1010	10,4
	4,0	1165-1195					525-585	= 2,0	500	10,9
②a	1370	0,3 - 1,7					700	0 - 1		

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle		Control rod travel	
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3		4	5	6	7	8	9
(3)									
1100	87,5-89,5 (85,5-91,5)	1140-1150*		700	91,5-94,5 (89,5-96,5)	100	19-21mmRW		
				500	83,0-85,0 (81,0-87,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications

Distributor-type Fuel-injection Pumps

WPP 001/4 OPE 2,3 a

1. Edition

En

VE 4/9 F 2100 L 37 (P) Overflow temperature 45° C
 0 460 494 020 021

supersedes -
 company Opel
 engine 2,3 l

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	2000	7,4-7,8 mm		
1.2 Supply-pump pressure	2000	7,4-8,0 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1250	41,5-42,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	300	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 54,0 cm ³ /1000 strokes		
1.6 Start	2440	11,0-17,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	2000	--		

Testoil-ISO 4113

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 0,8-1,8(0,6-2,0)	1250 3,9-4,7(3,6-5,0)	2000 (6,9-8,3)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 3,3-3-9		
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2100 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2520 2440 2130 2000 1250 600	max. 6,0 (10,0-18,0) 34,9-37,5 (33,9-38,5) 35,7-38,3 (34,7-39,3) (39,7-44,3) 34,5-37,5 (33,0-39,0)	
switch-off electr.	2100	0	
Idle stop	400-500 300	0 (4,0-12,0)	
End stop	380 440		
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12 V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,7-1,9
SVS	max. 4,9
K	20,0-22,0
L	11,1-14,9

Observations

Clearance between idle
position and stop for
increased idling:
0,5-1,0 mm

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⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 OPE 2,3b

1. Edition

En

VE 4/9 F 2000 L 37-1

Overflow temperature 45° C

0 460 494 046

supersedes -

company: Opel

engine: TL 0125-2,3 1

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting -- mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	2000	7,9-8,3 mm		
1.2 Supply-pump pressure	2000	6,9-7,5 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1250	41,5-42,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	300	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 54,0 cm ³ /1000 strokes		
1.6 Start	2440	11,0-17,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	2000	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 1,5-2,5(1,3-2,7)	1250 4,4-5,2(4,1-5,5)	2000 (7,7-8,8)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 3,6-4,2	1250 5,1-5,7	
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)	2000 55-110(40-125)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2520 2440 2000 1250 600	max. 12,0 (10,0-18,0) 34,2-36,8 (33,2-37,8) (39,7-44,3) 34,5-37,5 (33,0-39,0)	
switch-off	2000	0	
Idle stop	400-500 300	0 (4,0-12,0)	
End stop	380 440		
2.4 Solenoid	cut-in voltage	min. 10,0 V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,4-5,6
MS	1,7-1,9
SVS	max. 3,4
⌘ K	20,2-22,2
⌘ L	7,5-10,8
Observations	

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C2

C2

⑥

Test Specifications

Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWV 1,6 v 3

1. Edition

En

VE 4/9 F 1000 R 85-5
0 460 494 092

Overflow temperature 45° C

supersedes
company: VWV
engine: 068.5

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

--

mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1000	1,6-2,0 mm		
1.2 Supply-pump pressure	1000	3,7-4,5 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1000	24,5-25,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	--	-- cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 35,0 cm ³ /1000 strokes		
1.6 Start	1100	12,0-18,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600-750 Start	1000 (1,1-2,5)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,1-2,7	
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)	1000 55-1100(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1200-1280 1100 1000 600	0 (11,0-19,0) (22,7-27,3) 18,0-21,0 (16,5-22,5)	
switch-off	1000	0	
Idle stop	--		
End stop	400 500		
2.4 Solenoid	cut-in voltage min. 10,0 V rated voltage 12 V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max. 2,5
+ FH	1,8-2,4
* K	18,4-20,4
* L	5,9-8,3

Observations

+ operating stroke
(cold-start accel.)

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C3

C3

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VMA 3,6a

1. Edition

En

VE 6/11 F 2100 L 63

Overflow temperature 45° C

0 460 416 014

supersedes -

company: VM Cento

engine: HR 692 HT

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm \pm 0,02(0,04)

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1800	6,6-7,0 mm	0,67	
1.2 Supply-pump pressure	1800	6,6-7,2 bar (kgf/cm ²)	0,67	
1.3 Full-load delivery with charge-air pressure	600	36,0-40,0 cm ³ /1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1500	47,5-48,5 cm ³ /1000 strokes	0,67	
1.4 Idle regulation	450	10,0-14,0 cm ³ /1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min. 42,0 cm ³ /1000 strokes	0	
1.6 Start	2400	22,0-30,0 cm ³ /1000 strokes	0,67	
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=0,67 bar	n = rev/min mm	1000 2,3-3,1(2,0-3,4)	1500 4,9-5,5(4,5-5,9)	1800 (6,1-7,5)	2150 7,9-8,6
2.2 Supply pump LDA=0,67 bar	n = rev/min bar (kgf/cm ²)	400 1,7-2,3			2100 7,8-8,4
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)			2100 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2450 2400 2150 2100 1500 +600 600	9,0-15,0 (7,5-16,5) (21,5-30,5) 43,2-45,8 (41,7-47,2) 43,9-46,5 (42,5-47,9) (45,3-40,7) 38,5-41,5 (37,3-42,7) (34,6-41,4)	0,67 0,67 0,67 0,67 0,67 0,27 0
switch-off	2100	0	
Idle stop	620-700 450	0 (7,5-16,5)	0 0
End stop	400 470		
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12 V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	mm
K	--
KF	6,3-6,5
MS	0,9-1,1
SVS	max. 2,2 1,8-2,4
K	20,2-22,2
L	10,8-13,1

Observations

+ LDA-stroke 4,0 mm.
Use adjusting nut
(46) to correct.

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VWV 2,0 a1

1. Edition

En

VE 5/10 F 2400 L 35 - 2 Overflow temperature 45° C
0 460 405 003; 004

supersedes -
company: VWV
engine: Audi 100

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,14 mm \pm 0,02(0,04)

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	2,6-3,0 mm		
1.2 Supply-pump pressure	1400	5,0-5,6 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1400	33,5-34,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	375	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100 ⁴	min. 56,0 cm ³ /1000 strokes		
1.6 Start	2500	22,0-26,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,4-2,4(1,2-2,6)	1400 (2,1-3,5)	2400 5,1-5,9(4,8-6,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 2,8-3,4		2400 7,5-8,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2400 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2650 2500 2400 1400 750	7,0-11,0 (5,0-13,0) (20,0-28,0) 28,0-31,0 (27,2-31,8) (31,7-36,3) 24,5-27,5 (23,0-29,0)	
switch-off	2400	0	
Idle stop	500 375	max. 3,0 (4,0-12,0)	
End stop	400 500	min. 23,0 max. 23,0	
2.4 Solenoid	cut-in voltage	min. 10,0 V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	
KF	5,7-5,9
MS	1,7-1,9
SVS	max. 3,0
K	18,5-20,5
L	9,0-12,5
Observations	

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 PEU 2,3 h1

1. Edition

En

VE 4/10 F 2075 R 40-1 Overflow temperature 45° C
 0 460 404 004

supersedes -
 company: Peugeot
 engine: XD25 Autom.

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	5,0-5,4 mm	0,67	
1.2 Supply-pump pressure	1400	5,1-5,7 bar (kgf/cm ²)	0,67	
1.3 Full-load delivery with charge-air pressure	500	35,0-36,0 cm ³ /1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1000	47,3-49,7 cm ³ /1000 strokes	0,67	
1.4 Idle regulation	425	8,0-12,0 cm ³ /1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min. 70,0 cm ³ /1000 strokes	0	
1.6 Start	2375	20,0-26,0 cm ³ /1000 strokes	0,67	
1.7 Load-dependent port-closing	1400	--		

Testoil-ISO 4113

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=0,67 bar	n = rev/min mm	750 1,0-1,8(0,7-2,1)	1400 (4,5-5,9)	2000 7,7-8,5(7,4-8,8)
2.2 Supply pump LDA=0,67 bar	n = rev/min bar (kgf/cm ²)	400 2,4-3,0		2075 6,5-7,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2075 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2500 2375 2000 1750 1000 +700 500	6,0-12,0 (5,0-13,0) (19,0-27,0) (42,7-47,3) 47,3-48,3 (45,5-50,1) 47,3-49,7 (46,2-50,8) 41,5-42,5 (39,0-45,0) (32,5-38,5)	0,67 0,67 0,67 0,67 0,67 0,25 0
switch-off	2075	0	
Idle stop	460-590 425	0 (6,0-14,0)	0 0
End stop	430 430		0 0
2.4 Solenoid	cut-in voltage	min 10 V rated voltage 12 V.	

3. Dimensions

Designation	for assembly and adjustment mm
K dimension K 1	
KF	5,7-5,9
MS	0,9-1,1
SVS	max. 5,3
K	20,1-22,1
L	9,5-13,3

Observations

+ LDA-stroke 4,5 mm
 Use adjusting nut
 (46) to correct.

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 PEU 2,3h2

1. Edition

En

VE 4/9 F 2250 R 59

Overflow temperature 45° C

0 460 494 045

supersedes -
company: Peugeot
engine: XD 2

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

--

mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	5,3-5,7 mm		
1.2 Supply-pump pressure	1400	5,4-6,0 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1400	37,5-38,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	300	21,0-27,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 45,0 cm ³ /1000 strokes		
1.6 Start	2400	9,0-15,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 1,2-2,0(0,9-2,3)	1400 (4,8-6,2)	2000 7,8-8,4(7,4-8,8)	2250 8,6-9,4(8,3-9,7)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,9-3,5			2250 (7,4-8,0)
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)			2250 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2480-2550 2450 2400 2350 2250 2200 1400 1000 600	0 max. 6,0 (8,0-16,0) 19,0-27,0 (19,0-27,0) 33,2-35,8 (32,2-38,8) 33,5-36,1 (32,5-37,1) (35,3-40,3) 33,2-35,8 (32,2-36,8) 30,3-33,3 (28,8-34,8)	
switch-off	2250	0	
Idle stop	380 300	5,0-9,0 (3,0-11,0) (20,0-28,0)	
End stop	450 550		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	dimension K 1
KF	5,7-5,9
MS	1,0-1,2
SVS	max. 4,0
AX K	20,1-22,2
BX L	8,9-14,5

Observations

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12 V.
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C7

C7

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 Ope 1,6d

1. Edition

En

VE 4/9 F 2300 R 82

Overflow temperature 45° C

0 460 494 071

supersedes Opel
company: 2033-1,6 1
engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,0-3,4 mm		
1.2 Supply-pump pressure	1500	5,0-5,6 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	30,5-31,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	425	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.42,0 cm ³ /1000 strokes		
1.6 Start	2575	17,0-23,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1200 1,3-2,1(1,0-2,4)	1500 (2,5-3,9)	2300 6,6-7,4(6,3-7,7)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,4-3,0		2300 7,6-8,2
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2300 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2975 2775 2575 2300 2000	max. 4,0 (4,0-10,0) (3,0-11,0) (16,0-24,0) 26,8-29,2 (25,7-30,3) 27,5-29,5 (26,2-30,8)	
switch-off	2300	0	
Idle stop	max. 1500 600 425	0 2,0-6,0 (0-8,0) (4,0-12,0)	
End stop	400 500	min.30,0 max.28,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max.2,0
+FH	1,8-2,4
X	24,2-26,2
ØK	9,9-13,2

Observations
+ operating stroke
(cold-start accel.)

2.4 Solenoid	cut-in voltage min. 10,0 V rated voltage 12 V.
--------------	---

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 FIA 1,7e

1. Edition

Er

VE 3/10 F 1800 R 83

Overflow temperature 45° C

0 460 006

supersedes

company:

engine:

Fiat

8130.61. EVA

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	4,0-4,4 mm		
1.2 Supply-pump pressure	1500	5,2-5,8 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	42,5-43,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	400	8,0-12,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.40,0 cm ³ /1000 strokes		
1.6 Start	1900	26,0-34,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	1500	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,7-2,5(1,4-2,8)	1500 (3,5-4,9)	1800 4,9-5,7(4,6-6,0)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,2-2,8		1800 6,2-6,8
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1800 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1990-2040 1950 1900 1860-1880 1800 1500 600	0 10,5-16,5 (9,5-17,5) (26,0-34,0) Start 39,0-41,0 (37,7-42,3) (40,7-45,3) 33,0-36,0 (31,5-37,5)	
switch-off	1800	0	
Idle stop	520-620 400	0 (6,0-14,0)	
End stop	400 500		
2.4 Solenoid	cut-in voltage	min. 10 V	
		rated voltage 12 V.	

3. Dimensions

Designation	for assembly and adjustment mm
K	
KF	5,9-6,1
MS	1,4-1,6
SVS	max. 3,3
X K	20,2-22,2
X L	13,6-16,9
Observations	

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VW 2,3a

1. Edition

En

VE 6/10 F 2250 L 36 (P) Overflow temperature 45° C
0 460 406 005; 006

supersedes
company: VW
engine: 087 LT

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting -- mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	2000	3,2-3,6 mm		
1.2 Supply-pump pressure	2000	6,3-7,1 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	28,0-29,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	350	10,0-14,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 40,0 cm ³ /1000 strokes		
1.6 Start	2525	7,0-11,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1500 1,1-1,9(0,8-2,2)	2000 (2,7-4,1)	2250 3,9-4,7(3,6-5,0)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,6-3,4		2250 7,0-7,8
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2250 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2525 2250 1500 750	(5,0-13,0) 23,8-25,8 (22,5-27,1) (26,2-30,8) 27,5-30,5 (26,0-32,0)	
switch-off	2250	0	
Idle stop	400 350	2,0-8,0 (1,0-9,0) (8,0-16,0)	
End stop	400 500	min. 28,0 max. 29,0	
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12 V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	6,4-6,6
MS	1,4-1,6
SVS	max. 4,5
x XK	20,1-22,1
XL	8,9-12,6

Observations

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 MAN 3,7c
1. Edition

En

Testoil-ISO 4113

VE 4/10 F 1500 R 57-1
0 460 404 014

Overflow temperature 45° C

supersedes MAN
company: D 0224 ME
engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers
0,2

Test Instructions and Test Equipment

see VDT-W-460/.

Pre-stroke setting

mm

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1000	5,3-5,7 mm		
1.2 Supply-pump pressure	1000	5,5-6,1 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1000	61,5-62,5 cm ³ /1000 strokes		2,5(3,5)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	350	10,0-14,0 cm ³ /1000 strokes		2,5(3,5)
1.5 Full-speed regulation	100	min. 60,0 cm ³ /1000 strokes		
1.6 Start	1650	4,0-10,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 2,6-3,4(2,3-3,7)	1000 (4,8-6,2)	1400 7,8-8,6(7,5-8,9)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 3,6-4,2		1400 7,0-7,6
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1500 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1680-1740 1650 1550 1480 1000 600	0 (2,5-11,5) max. 60,0 68,5-71,5 (67,3-72,7) (59,3-64,7) 57,25-60,75(55,6-62,4)	
switch-off	1500	0	
Idle stop	400-450 350	0 (7,5-16,5)	
End stop	400 470		
2.4 Solenoid	cut-in voltage	min. 20,0 V rated voltage 12 V.	

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,7-5,9
MS	1,1-1,3
SVS	max. 4,0
A K	25,0-27,0
B L	12,2-15,5
Observations pushing electromagnet 24 V	

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C11

C11

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 Sof 2,5b 1

1. Edition

En

4/9 F 2100 R 22-3

Overflow temperature 45° C

0 460 494 024

supersedes Sofim
company 8140.6.1
engine

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm \pm 0,02 (0,04) mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1800	7,4-7,8 mm		
1.2 Supply-pump pressure	1800	6,3-6,9 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	2000	37,5-38,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	370	8,0-12,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 55,0 cm ³ /1000 strokes		
1.6 Start	2350	19,0-25,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	1800	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	400 1,8-2,8(1,6-3,0)	1800 (6,9-8,3)	2100 8,3-9,3(8,1-9,5)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,9-3,5		2100 6,9-7,5
Overflow delivery	n = rev/min cm ³ /10 s	500 55-111(40-126)		2100 55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2500	max. 3,0	
	2350	(18,0-26,0)	
	2100	36,7-39,3 (35,3-40,3)	
	2000	(35,3-40,3)	
	1100	43,5-46,5 (42,7-47,3)	
	600	35,3-38,3 (33,8-39,8)	
switch-off	2100	0	
Idle stop	500	max. 3,0	
	370	(6,0-14,0)	
2.4 Solenoid	cut-in voltage min. 10V rated voltage 12 V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	
KF	5,4-5,6
MS	1,7-1,9
SVS	max. 2,7
+ FH	1,8-2,4
A	
B	

Observations

+ operating stroke
(cold-start accel.)

Testoil-ISO 4113

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4.82

C12

C12

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 RVI

1. Edition

En

VE 4/12 F 1500 R 51
O 460 424 001

Overflow temperature 45° C

supersedes -
company: RVI-Saviem
engine: 720 S

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

-- mm

see VDT-W-460/

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1000	3,1-3,5 mm	0,67	
1.2 Supply-pump pressure	1000	5,3-5,9 bar (kgf/cm ²)	0,67	
1.3 Full-load delivery with charge-air pressure	900	63,5-66,5 cm ³ /1000 strokes	0	2,5(4,5)
Full-load delivery without charge-air pressure	900	83,0-84,0 cm ³ /1000 strokes	0,67	
1.4 Idle regulation	300	20,0-26,0 cm ³ /1000 strokes	0	2,5(4,5)
1.5 Full-speed regulation	100	min. 100,0 cm ³ /1000 strokes	0	
1.6 Start	1675	9,5-15,5 cm ³ /1000 strokes	0,67	
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	700 1,2-2,0(0,9-2,3)	1000 (2,6-4,0)	1400 4,9-5,7(4,6-6,0)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	300 2,7-3,0		1500 6,9-7,5
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1500 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1700-1780	0	0,67
	1675	(7,5-17,5)	0,67
	1650	27,0-33,0 (25,0-35,0)	0,67
	1500	84,0-87,0 (82,5-88,5)	0,67
	900	(62,0-68,0)	0
	900	(80,5-86,5)	0,67
	+500	65,0-69,0 (64,0-70,0)	0,27
	500	56,0-60,0 (54,2-61,8)	0
switch-off	1500	0	
Idle stop	380-480	0	
	300	(18,0-28,0)	
End stop	180		
	240		
2.4 Solenoid	cut-in voltage xxx min. 10,0V rated voltage 12 V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
SVS	max. 6,0
X XK	20,1-22,1
X XL	12,6-16,4

Observations
24 V-Electromagnet

LDA-stroke 4,5 mm
+ Use adjusting nut
(46) to correct.

Test Specifications Distributor-type Fuel-injection Pumps

VE 4/9 F 2300 R 43
0 460 494 034

Overflow temperature 45° C

En
supersedes Fiat
company: X 8/28
engine: 4

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

see VDT-W-480/

Pre-stroke setting

mm

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	4,3-4,7 mm		
1.2 Supply-pump pressure	1500	5,1-5,7 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	34,2-35,2 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	350	8,0-12,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 48,0 cm ³ /1000 strokes		
1.6 Start	2400	14,5-20,5 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	1500	--		

Testoil-ISO 4113

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	800 1,8-2,6(1,5-2,9)	1500 (3,8-5,2)	2300 7,0-7,8(6,7-8,1)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,5-3,1		2300 6,9-7,5
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2300 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2500 2400 2250 1500 600	2,0-8,0 (13,5-21,5) 28,0-30,0 (26,7-31,3) (32,4-37,0) 23,5-26,5 (22,0-28,0)	
switch-off	2300	0	
Idle stop	400-540 400 350	0 max. 4,0 (6,0-14,0)	
End stop	400 480		
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12 V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,7-1,9
SVS	max. 3,5
XK	20,1-22,1
XL	9,5-13,3

Observations

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 VWV 2,3b1

1. Edition

En

VE 6/10 F 2400 L 32
0 460 406 003

Overflow temperature 45° C

supersedes VW
company: 087/10
engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/.

Pre-stroke setting

mm

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,0-3,4 mm		
1.2 Supply-pump pressure	1500	5,1-5,9 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	27,0-28,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	350	10,0-14,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 45,0 cm ³ /1000 strokes		
1.6 Start	2600	15,5-21,5 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

Testoil-ISO 4113

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 0,8-1,6(0,5-1,9)	1500 (2,5-3,9)	2000 4,5-5,3(4,2-5,6)	2400 5,4-6,2(5,1-6,5)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,7-3,5			2400 6,6-7,4
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)			2400 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2700 2600 2400 1500 750	7,0-11,0 (14,5-22,5) 23,5-25,5 (22,2-26,8) (25,2-29,8) 26,5-29,5 (25,0-21,0)	
switch-off	2400	0	
Idle stop	400 350	3,0-9,0 (8,0-16,0)	
End stop	400 500	min. 30,0 max. 30,0	
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	6,4-6,6
MS	1,4-1,6
SVS	max. 3,0
AX XK	18,5-20,5
BX XL	9,2-12,9

Observations

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⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 VWV 2,0c

1. Edition

En

VE 5/10 F 2400 L 35-6 (P Overflow temperature 45° C
0 460 405 027; 028

supersedes
company: VWV
engine: Audi 100

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,14 mm \pm 0,02 (0,04)

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	2,6-3,0 mm		
1.2 Supply-pump pressure	1400	5,0-5,6 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1400	33,5-34,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	375	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 56,0 cm ³ /1000 strokes		
1.6 Start	2500	22,0-26,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,4-2,4(1,2-2,6)	1400 (2,1-3,5)	2400 5,1-5,9(4,8-6,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 2,8-3,4		2400 7,5-8,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2400 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2650 2500 2400 1400 750	7,0-11,0 (5,0-13,0) (20,0-28,0) 28,0-31,0 (27,2-31,8) (31,7-36,3) 24,5-27,5 (23,0-29,0)	
switch-off	2400	0	
Idle stop	500 375	max. 3,0 (4,0-12,0)	
End stop	400 500	min. 23,0 max. 23,0	
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	--
KF	5,7-5,9
MS	1,7-1,9
SVS	max. 3,0
✱ XK	18,5-20,5
✱ XL	9,0-12,5

Observations

Mechanical Stop control

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C16

C16

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 REN 2,0c

1. Edition

En

VE 4/9 F 1500 R 68

Overflow temperature 45° C

0 460 494 054

 supersedes
 company:
 engine:

 Renault
 4130 RMC

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	1,7-2,1 mm		
1.2 Supply-pump pressure	1500	6,1-6,7 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	34,7-35,7 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	350	8,0-12,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 40,0 cm ³ /1000 strokes		
1.6 Start	1600	15,0-21,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1200 0,8-1,6(0,5-1,9)	1500 (1,2-2,6)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 3,9-4,5	1200 5,4-6,0
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)	1500 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1700-1770 1600 1500 1000 600	0 (14,0-22,0) (32,9-37,5) 28,7-31,7 (27,9-32,5) 23,2-27,2 (22,2-28,2)	
switch-off	1500	0	
Idle stop	400-460 350	0 (6,0-14,0)	
End stop	360 460		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max. 3,3
XK	19,5-21,5
XL	8,3-11,6

Observations

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VWV 1,6i

1. Edition

En

VE 4/9F 2250 R 78-1 (P) Overflow temperature 45° C

0 460 404 098; 099

supersedes -
company: VWV
engine: 086T-1,6-Autom.

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting -- mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	4,0-4,4 mm	0,75	
1.2 Supply-pump pressure	1500	5,5-6,1 bar (kgf/cm ²)	0,75	
1.3 Full-load delivery with charge-air pressure	600	23,5-24,5 cm ³ /1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1500	43,5-44,5 cm ³ /1000 strokes	0,75	
1.4 Idle regulation	475	7,0-11,0 cm ³ /1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min. 35,0 cm ³ /1000 strokes	0	
1.6 Start	2525	9,0-15,0 cm ³ /1000 strokes	0,75	
1.7 Load-dependent port-closing	--			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,9-2,7(1,6-3,0)	1500 (3,5-4,9)	2250 6,2-7,0(5,9-7,3)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	1600 3,3-3,9		2250 7,4-8,0
Overflow delivery	n = rev/min cm ³ /10 s	500 55.110(40-125)		2250 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2730-2870 2525 2250 1500 +1000 600	0 (8,0-16,0) 38,5-40,5 (37,2-41,8) (41,7-46,3) 33,5-34,5 (31,7-36,3) (21,0-27,0)	0,75 0,75 0,75 0,75 0,3 0
switch-off	2250	0	
Idle stop	1200 475	max. 10,0 (5,0-13,0)	0
End stop	440 520		

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max. 4,4
K	18,4-20,4
K	10,4-12,7

Observations

LDA-stroke 4,0 mm
+ Use adjusting nut
(46) to correct.

2.4 Solenoid	cut-in voltage min. 10,0 V rated voltage 12V
--------------	---

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 PEU 2,3 f

1. Edition

En

VE 4/10 F 2125 R 67-1

Overflow temperature 45° C

0 460 404 020

supersedes

company: Peugeot

engine: XD 25 - US 81

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	5,0-5,4 mm	0,8	
1.2 Supply-pump pressure	1500	5,4-6,0 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	600	36,0-39,0 cm ³ /1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1125	48,7-49,7 cm ³ /1000 strokes	0,8	
1.4 Idle regulation	390	8,0-12,0 cm ³ /1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min. 53,0 cm ³ /1000 strokes	0	
1.6 Start	2450	9,5-15,5 cm ³ /1000 strokes	0,8	
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 1,3-2,1(1,0-2,4)	1000 2,9-3,5(2,5-3,9)	1500 (4,5-5,9)	2000 6,9-7,7(6,6-8,0)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 1,6-2,2			2075 7,6-8,2
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)			2125 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2500 2450 2350 2050 1400 1125 +750 600	max. 9,0 (7,5-16,5) 23,0-31,0 (23,0-31,0) 44,3-46,7 (43,2-47,8) 50,6-53,0 (49,5-54,1) (46,9-51,5) 42,3-43,3 (39,8-45,8) (34,5-40,5)	0,8 0,8 0,8 0,8 0,8 0,8 0,25 0
switch-off	2125	0	
Idle stop	450-550 390	0 (6,0-14,0)	
End stop	400 500		
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V	

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	0,9-1,1
SVS	max. 1,2
X XK	20,0-22,2
XL	8,8-12,2

Observations

LDA-stroke 4,5 mm
+ Use adjusting nut
(46) to correct.

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C19

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VWV 1,6v2

1. Edition

En

VE 4/9 F 1500 R 85-3

0 460 494 108

Overflow temperature 45° C

supersedes -

company: VWV

engine: 50 Hz units

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

--

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1480	3,1-3,5 mm		
1.2 Supply-pump pressure	1480	4,9-5,5 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1480	32,5-33,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	425	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 35,0 cm ³ /1000 strokes		
1.6 Start	1550	12,0-18,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

Testoil-ISO 4113

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-2,5)	1480 (2,6-4,0)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,3-2,9	
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)	1500 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1600-1650 1550 1480 600	0 (11,0-19,0) (30,7-35,3) 21,0-24,0 (19,5-25,5)	
switch-off	1500	0	
Idle stop	560-700 425	0 (4,0-12,0)	
End stop	400 500		
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V	

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max. 2,5
+FH	1,8-2,4
XX XK	18,4-20,4
B XX XL	10,2-13,5

Observations

+ operating stroke
(cold-start accel.)
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⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 FIA 4,6a

1. Edition

En

VE 5/11 F 1250 R 58

Overflow temperature 45° C

0 460 415 001

 supersedes
 company: Fiat
 engine: 8055.04.200

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	900	4,8-5,2 mm		
1.2 Supply-pump pressure	900	4,5-5,1 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	900	65,0-66,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	350	11,5-15,5 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 70,0 cm ³ /1000 strokes		
1.6 Start	1330	23,0-29,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	400 1,1-1,9(0,8-2,2)	900 (4,3-5,7)	1100 6,4-7,2(6,1-6,5)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,7-3,3		1250 5,7-6,3
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1250 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1370-1420 1330 1300 1230 900 500	0 (21,5-30,5) 35,0-41,0 (33,5-42,5) 62,0-65,0 (60,8-66,2) (62,8-68,2) 53,75-57,25 (52,1-58,9)	
switch-off	1250	0	
Idle stop	430-500 350	0 11,5-15,5	
End stop	150 250		
2.4 Solenoid	cut-in voltage min. 10,0 V rated voltage 12V		

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,4-5,6
MS	1,5-1,7
SVS	max. 6,0
+FH	1,8-2,4
✕ XK	25,0-27,0
✕ XL	10,8-14,1

Observations

 + operating stroke
 (cold-start accel.)

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C21

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⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 PEU 2,3h

1. Edition

En

VE 4/10 F 2075 R 40

Overflow temperature 45° C

0 460 404 003

supersedes Peugeot
company: XD 2 S
engine.

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	5,0-5,4 mm	0,67	
1.2 Supply-pump pressure	1400	5,1-5,7 bar (kgf/cm ²)	0,67	
1.3 Full-load delivery with charge-air pressure	500	35,0-36,0 cm ³ /1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1000	47,3-49,7 cm ³ /1000 strokes	0,67	
1.4 Idle regulation	375	8,0-12,0 cm ³ /1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min. 70,0 cm ³ /1000 strokes	0	
1.6 Start	2375	20,0-26,0 cm ³ /1000 strokes	0,67	
1.7 Load-dependent port-closing	1400	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=0,67bar	n = rev/min mm	750 1,0-1,8(0,7-2,1)	1400 (4,5-5,9)	2000 7,7-8,5(7,4-8,8)
2.2 Supply pump LDA=,67bar	n = rev/min bar (kgf/cm ²)	400 2,4-3,0		2075 6,5-7,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2075 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2500 2375 2000 1750 1000 +750 500	6,0-12,0 (5,0-13,0) (19,0-27,0) 43,8-46,2 (42,7-47,3) 47,3-48,3 (45,5-50,1) (46,2-50,8) 41,5-42,5 (39,0-45,0) 35,0-36,0 (32,5-38,5)	0,67 0,67 0,67 0,67 0,67 0,25 0
switch-off	2075	0	
Idle stop	400-470 375	0 (6,0-14,0)	0 0
End stop	430 480		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	MaB K 1
KF	5,7-5,9
MS	0,9-1,1
SVS	max. 5,3
X XK	20,1-22,1
X XL	10,5-14,3

Observations

LDA-stroke 4,5 mm
+ Use adjusting nut
(46) to correct.

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C22

C22

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VMA 2,2a

1. Edition

En

VE 4/10 F 2100 L 75

Overflow temperature 45° C

0 460 404 024

 supersedes
 company: VM-Motori
 engine: HR 492 HT

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting -- mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1900	8,2-8,6 mm	0,7	
1.2 Supply-pump pressure	1900	6,8-7,4 bar (kgf/cm ²)	0,7	
1.3 Full-load delivery with charge-air pressure	600	32,0-35,0 cm ³ /1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1600	49,0-50,0 cm ³ /1000 strokes	0,7	
1.4 Idle regulation	400	15,0-19,0 cm ³ /1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min. 65,0 cm ³ /1000 strokes	-	
1.6 Start	2100	43,0-46,0 cm ³ /1000 strokes	0,7	
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=0,7bar	n = rev/min mm	1000 2,0-2,8(1,7-3,1)	1900 (7,7-9,1)	2100 9,4-10,0(9,0-10,4)
2.2 Supply pump LDA=0,7 bar	n = rev/min bar (kgf/cm ²)	400 1,5-2,1		2100 7,5-8,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2100 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2450	max. 5,0	0,7
	2300	24,5-30,5 (23,5-31,5)	0,7
	2100	(42,2-46,8)	0,7
	1600	31,0-34,0 (30,3-34,8)	0
	1600	(47,2-51,8)	0,7
	+700	41,0-44,0 (39,5-45,5)	0,3
	600	(30,5-36,5)	0
switch-off	2100	0	
Idle stop	550-750 400	0 (13,0-21,0)	
End stop	400 500		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
SVS	4,4-4,6
+FH	1,8-2,4
X	20,2-22,2
Y	10,0-13,3

Observations

 LDA-stroke 4,5 mm
 + Use adjusting nut
 (46) to correct.

2.4 Solenoid

 cut-in voltage min. 10,0V
 rated voltage 12V

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VMA 2,0a

1. Edition

En

40

VE 4,) F 2150 L 31
0 460 494 016

Overflow temperature 45° C

supersedes -
company: VM-Motori
engine: HR 488 HT

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/.

Pre-stroke setting

mm

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1900	6,5-6,9 mm	0,7	
1.2 Supply-pump pressure	1900	5,7-6,3 bar (kgf/cm ²)	0,7	
1.3 Full-load delivery with charge-air pressure	600	30,5-33,5 cm ³ /1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1600	46,5-47,5 cm ³ /1000 strokes	0,7	
1.4 Idle regulation	400	8,0-12,0 cm ³ /1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min. 55,0 cm ³ /1000 strokes	0	
1.6 Start	2300	27,5-33,5 cm ³ /1000 strokes	0,7	
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,5-2,3(1,2-2,6)	1900 (6,0-7,4)	2150 7,5-8,3(7,2-8,6)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,0-2,6		2150 6,3-6,9
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2150 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2500-2650 2450 2300 2150 1600 1600 +600 600	0 max. 10,0 (26,5-34,5) 40,0-43,0 (39,2-43,8) 34,5-35,5 (32,7-37,3) (44,7-49,3) 38,3-41,3 (36,8-42,8) (29,0-35,0)	0,7 0,7 0,7 0 0,7 0,27 0
switch-off	2150	0	
IC stop	800 500 400	0 max. 6,0 (6,0-14,0)	0 0 0
End stop	400 500		
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
SVS	max. 6,0
A	
B	

Observations

LDA-stroke 3,8 mm
+ Use adjusting nut
(46) to correct.

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Test Specifications

Distributor-type Fuel-injection Pumps

WPP 001/4 VWV 1,6 v 1

1. Edition

En

VE 4/9 2000 R 85

Overflow temperature 45° C

0 460 494 086

supersedes -

company: VWV

engine: Industrie-Motor
065.5

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting -- mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,1-3,5 mm		
1.2 Supply-pump pressure	1500	4,9-5,5 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	32,5-33,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	425	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 35,0 cm ³ /1000 strokes		
1.6 Start	2050	9,0-15,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-2,5)	1500 (2,6-4,0)	1800 4,2-4,8(3,8-5,2)	2000 4,7-5,5(4,4-5,8)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,1-2,7	1500 4,9-5,5	2000 6,1-6,7	
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2000 55-110(40-125)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2070 2050 2010-2020 2000 1980 1500 600	max. 2,0 (8,0-16,0) Start 29,0-31,0 (27,7-32,3) 29,0-31,0 (27,7-32,3) (30,7-35,3) 21,0-24,0 (19,5-25,5)	
switch-off	2000	0	
Idle stop	700 600 425	0 max. 2,0 (4,0-12,0)	
End stop	400 500		
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max. 2,5
+FH	1,8-2,4
AX XK	18,4-20,4
BX XL	13,6-17,0

Observations

+operating stroke
(cold-start accel.)
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Test Specifications

Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,3 d

1. Edition

En

VE 4/9 F 2250 R 50

Overflow temperature 45° C

0 460 494 041

supersedes -

company: Peugeot

engine: XD2 USA

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

--

mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1600	3,4-3,8 mm		
1.2 Supply-pump pressure	1600	5,4-6,0 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1400	39,0-40,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	400	10,0-14,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.50,0 cm ³ /1000 strokes		
1.6 Start	2350	23,0-29,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

Testoil-ISO 4113

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	900 0,3-1,1 (0-1,4)	1200 1,8-2,4 (1,4-2,8)	1600 2,9-4,3	2000 5,0-5,8 (4,7-6,1)	2200 6,0-6,8 (5,7-7,1)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 1,1-1,7				2250 7,9-8,5
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)				2250 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2500 2450 2350 2200 2000 1400 900 600	max. 5,0 6,5-12,5 (5,5-13,5) (22,0-30,0) 34,8-37,2 (33,7-38,3) 36,5-38,5 (35,2-39,8) (37,2-41,8) 32,5-35,5 (31,7-36,3) 31,5-34,5 (30,0-36,0)	
switch-off	2250	0	
Idle stop	440-600 400	0 (8,0-16,0)	
End stop	465 515		
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
SVS	max.3,2
XK	20,2-22,2
XL	15,8-19,8
Observations	

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⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 VWV 1,6V

1. Edition

En

VE 4/9 F 2000 R 86

Overflow temperature 45° C

0 460 494 088

supersedes VWV
company: 086-1.6 Bell
engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting -- mm

see VDT-W-480/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,1-3,5 mm		
1.2 Supply-pump pressure	1500	4,9-5,5 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	33,5-34,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	350	5,0-9,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.35,0 cm ³ /1000 strokes		
1.6 Start	2100	22,0-26,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-2,5)	1500 (2,6-4,0)	2000 4,7-5,5(4,4-5,8)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,3-2,7		2000 6,0-6,6
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2000 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2200 2100 2000 1500 600	1,0-7,0 (0,0-8,0) (20,0-28,0) 26,7-29,3 (25,7-30,3) (31,7-36,3) 22,5-25,5 (21,0-27,0)	
switch-off	2000	0	
Idle stop	400-480 350	0 (3,0-11,0)	
End stop	400 500	min. 24,0 max. 26,0	
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max.2,5
+FH	1,8-2,4
AX XK	
B X XL	

Observations

+ operating stroke
(cold-start accel.)

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⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 MAN 3,7c 1
1. Edition

En

Testoil-ISO 4113

VE 4/10 F 1500 R 57
0 460 404 010

Overflow temperature 45° C

superseded by
company: MAN
engine: D 0224 MF

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers
Pre-stroke setting 0,2 mm

Test Instructions and Test Equipment
see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1000	5,3-5,7 mm		
1.2 Supply-pump pressure	1000	5,5-6,1 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1000	61,5-62,5 cm ³ /1000 strokes		2,5(3,5)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	350	10,0-14,0 cm ³ /1000 strokes		2,5(3,5)
1.5 Full-speed regulation	100	min. 60,0 cm ³ /1000 strokes		
1.6 Start	1650	4,0-10,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 2,6-3,4(2,3-3,7)	1000 (4,8-6,2)	1400 7,8-8,6(7,5-8,9)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 3,6-4,2		1400 7,0-7,6
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1500 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1680-1740 1650 1550 1480 1000 600	0 (2,5-11,5) max. 60,0 68,5-71,5 (67,3-72,7) (59,3-64,7) 57,25-60,75(55,6-62,4)	
switch-off	1500	0	
Idle stop	400-450 350	0 (7,5-16,5)	
End stop	400 470		
2.4 Solenoid	cut-in voltage min. 20,0 V rated voltage 12V		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	--
KF	5,7-5,9
MS	1,1-1,3
SVS	max. 4,0
XK	25,0-27,0
XL	12,2-15,5

Observations

D4

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Test Specifications

Distributor-type Fuel-injection Pumps

WPP 001/4 VWV 1,6v4

1. Edition

En

VE 4/9 F 1800 R 85-1

Overflow temperature 45° C

0 460 494 107

supersedes

company: VWV

engine: 638/10

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

--

mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,1-3,5 mm		
1.2 Supply-pump pressure	1500	4,9-5,5 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	32,5-33,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	425	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 35,0 cm ³ /1000 strokes		
1.6 Start	1870	9,0-15,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-2,5)	1500 (2,6-4,0)	1780 3,8-4,6(3,5-4,9)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,3-2,9		1780 5,5-6,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1800 55-110(40-125)

2.3 Fuel deliveries			
Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1920-1970 1870 1780 1500 600	0 (8,0-16,0) 29,9-31,9(28,6-33,2) (30,7-35,3) 21,0-24,0(19,5-25,5)	
switch-off	1800	0	
Idle stop	560-700 425	0 (4,0-12,0)	
End stop	400 500		
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V	

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max. 2,5
+FH	1,8-2,4
AX XK	18,4-20,4
BX XL	9,7-13,1

Observations

+ operating stroke
(cold-start accel.)
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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 REN 2,0b

1. Edition

En

VE 4/9 F 2250 R 41

Overflow temperature 45° C

O 460 494 027

 supersedes Renault
 company: 852
 engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

--

mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	4,6-5,0 mm		
1.2 Supply-pump pressure	1400	4,9-5,5 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1400	40,0-41,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		2,5(3,0)
1.4 Idle regulation	350	6,0-10,0 cm ³ /1000 strokes		
1.5 Full-speed regulation	100	min.52,0 cm ³ /1000 strokes		
1.6 Start	2400	17,0-23,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 2,8-3,6(2,5-3,9)	1400 (4,1-5,5)	2000 6,8-7,6(6,5-7,9)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	1000 3,9-4,5		2000 6,5-7,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2250 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2630-2700 2400 2200 2100 1400 1000	0 (16,0-24,0) 32,9-34,9 (31,6-36,2) 33,5-35,5 (32,2-36,8) (38,2-42,8) 35,6-37,6 (34,8-38,4)	
switch-off	2250	0	
Idle stop	400-460 350	0 (4,0-12,0)	
End stop	420 480		
2.4 Solenoid	cut-in voltage min. 10,0 V rated voltage 12V		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
SVS	max.3,5
XK	20,1-22,1
XL	9,5-13,3

Observations

Test Specifications

Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,3e

1. Edition

En

VE 4/10 F 2075 R 67
0 460 404 012

Overflow temperature 45° C

supersedes
company: Peugeot
engine: XD 2 S - US

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	5,0-5,4 mm	0,8	
1.2 Supply-pump pressure	1500	5,4-6,0 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	600	36,0-39,0 cm ³ /1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1125	48,7-49,7 cm ³ /1000 strokes	0,8	
1.4 Idle regulation	390	8,0-12,0 cm ³ /1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min. 53,0 cm ³ /1000 strokes	0	
1.6 Start	2400	9,5-15,5 cm ³ /1000 strokes	0,8	
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 1,3-2,1 (1,0-2,4)	1000 2,9-3,5 (2,5-3,9)	1500 (4,5-5,9)	2000 6,9-7,7 (6,6-8,0)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 1,6-2,2			2075
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110 (40-125)			2075 55-110 (40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2450 2400 2300 2000 1400 1125 +750 600	max. 9,0 (7,5-16,5) 24,5-32,5 (24,5-32,5) 44,3-46,7 (43,2-47,8) 50,6-53,0 (49,5-54,1) (46,9-51,5) 42,3-43,3 (39,8-45,8) 36,0-39,0 (34,5-40,5)	0,8 0,8 0,8 0,8 0,8 0,8 0,25 0
switch-off	2075	0	
Idle stop	450-550 390	0 (6,0-14,0)	
End stop	400 500		
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V	

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	0,9-1,1
SVS	max. 1,4
XK	20,2-22,2
XL	8,8-12,2

Observations

LDA-stroke 4,5 mm
+ Use adjusting nut
(46) to correct.

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Test Specifications

Distributor-type Fuel-injection Pumps

WPP 001/4 BUK 1,5b

1. Edition

En

46

VE 3/10 F 1800 L 33-1
0 460 403 002

Overflow temperature 45° C

supersedes
company: Bukh
engine: DU 36 ME

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1600	4,3-4,7 mm		
1.2 Supply-pump pressure	1600	6,4-7,0 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1600	37,5-38,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	500	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 38,0 cm ³ /1000 strokes		
1.6 Start	1850	17,0-23,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,0-1,8(0,7-2,1)	1600 (3,8-5,2)	1800 5,2-6,0(4,9-6,3)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 1,7-2,3		1800 7,2-7,8
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1800 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1930-2000 1900 1850 1750 1600 1000 600	0 1,0-9,0 (16,0-24,0) 34,7-37,3 (33,7-38,3) (35,7-40,3) 39,0-42,0 (38,2-42,8) 31,5-35,5 (30,5-36,5)	
switch-off	1800	0	
Idle stop	530-600 500	0 (4,0-12,0)	
End stop	470 570		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	--
KF	5,9-6,1
MS	0,9-1,1
SVS	max. 4,2
X XK	20,2-22,2
B _X XL	12,2-15,5

Observations
pushing electromagnet

2.4 Solenoid

cut-in voltage

min. 10,0 V
rated voltage 12V

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Test Specifications

Distributor-type Fuel-injection Pumps

WPP 001/4 VWV 1,6b

1. Edition

En

VE 4/9 F 2400 R 66-Z

Overflow temperature 45° C

0 460 494 050

 supersedes
 company: VWV
 engine: Rabbit

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting -- mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	2,0-2,4 mm		
1.2 Supply-pump pressure	1500	5,0-5,6 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	30,0-31,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	415	6,5-10,5 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.35,0 cm ³ /1000 strokes		
1.6 Start	2600	11,0-17,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1500 (1,5-2,9)	2000 4,3-4,9(3,9-5,3)	2400 6,0-7,0(5,8-7,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 1,1-1,7		2400 7,5-8,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2400 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2700 2600 2400 1500 600	2,0-10,0 (2,0-10,0) (10,0-18,0) 25,9-28,5 (24,9-29,5) (28,2-32,8) 17,5-20,5 (16,0-22,0)	
switch-off	2400	0	
Idle stop	1200 600 415 400 500	max.3,0 max.6,0 (4,5-12,5)	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max.4,0 1,8-2,4
XK	18,4-20,4
XX	9,1-12,9

Observations

 + operating stroke
 (cold-start accel.)

Test Specifications

Distributor-type Fuel-injection Pumps

WPP 001/4 VWV 1,6L

1. Edition

En

VE 4/9 F 2400 R 66-12 (P)

0 460 494 082; 0,83

supersedes

company:

engine:

VWV

Rabbit Autom.

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

--

mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,1-3,5 mm		
1.2 Supply-pump pressure	1500	4,9-5,5 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	30,0-31,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	415	6,5-10,5 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 35,0 cm ³ /1000 strokes		
1.6 Start	2600	11,0-17,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-2,5)	155 (2,6-4,0)	2400 6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,1-2,7		2400 7,0-7,6
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2400 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2700 2600 2400 1500 600	2,0-10,0 (2,0-10,0) (10,0-18,0) 25,9-28,5 (24,9-29,5) (28,5-32,8) 17,5-20,5 (16,0-22,0)	
switch-off	2400	0	
Idle stop	1200 600 415	max. 5,0 max. 6,0 (4,5-12,5)	
End stop	400 500	min. 30,0 max. 30,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	4,4
XK	18,4-20,4
XL	10,4-12,7

Observations

LDA-stroke 4,0 mm
+ Use adjusting nut
(46) to correct.

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⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 VWW 1,6d

1. Edition

En

VE 4/9 F 2400 R 66-8

0 460 494 077

supersedes

company: VWW

engine: 1,6l Rabbit

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,1-3,5 mm		
1.2 Supply-pump pressure	1500	4,9-5,5 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	30,0-31,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	415	6,5-10,5 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.35,0 cm ³ /1000 strokes		
1.6 Start	2600	11,0-17,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-2,5)	1500 (2,6-4,0)	2400 6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,1-2,7		2400 7,0-7,6
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2400 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2700 2600 2400 1500 600	2,0-10,0 (2,0-10,0) (10,0-18,0) 25,9-28,5 (24,9-29,5) (28,2-32,8) 17,5-20,5 (16,0-22,0)	
switch-off	2400	0	
Idle stop	1200 600 415	max. 3,0 max. 6,0 (4,5-12,5)	
End stop	400 500		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max.3,2
+FH	1,8-2,4
X	18,4-20,4
X	10,5-13,8

Observations

+ operating stroke
(cold-start accel.)
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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VW 1,6a

1. Edition

En

46

VE 4/9 F 2400 R 66-3
R 66-7supersedes -
company: VW
engine:0 460 494 052
0 460 494 075

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/..

Pre-stroke setting

mm

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,1-3,5 mm		
1.2 Supply-pump pressure	1500	4,9-5,5 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	33,0-34,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	475	5,0-11,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.35,0 cm ³ /1000 strokes		
1.6 Start	2600	11,0-17,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-2,5)	1500 (2,6-4,0)	2400 6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,1-2,7		2400 7,0-7,6
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2400 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2700 2600 2400 1500 600	2,0-10,0 (2,0-10,0) (10,0-18,0) 27,7-30,3 (26,7-31,3) (31,2-35,8) 21,5-24,5 (20,0-26,0)	
switch-off	2400	0	
Idle stop	1200 650 475	max. 3,0 max. 5,0 5,0-11,0 (4,0-12,0)	
End stop	400 500	min.20,0 max.21,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max.2,5
+FH	1,8-2,4
X XK	18,4-20,4
X XL	9,1-12,9

Observations

+ operating stroke
(cold-start accel.)

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VWV 1,6k

1. Edition

En

VE 4/9 F 2250 R 79
R 79 Psupersedes
company: VWV
engine: 086-T-1,60 460 494 064
0 460 494 065

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

--

mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	4,0-4,4 mm	0,75	
1.2 Supply-pump pressure	1500	5,5-6,1 bar (kgf/cm ²)	0,75	
1.3 Full-load delivery with charge-air pressure	600	23,5-24,5 cm ³ /1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1500	43,5-44,5 cm ³ /1000 strokes	0,75	
1.4 Idle regulation	475	7,0-11,0 cm ³ /1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min.35,0 cm ³ /1000 strokes	0	
1.6 Start	2525	9,0-15,0 cm ³ /1000 strokes	0,75	
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,9-2,7(1,6-3,0)	1500 (3,5-4,9)	2250 6,2-7,0(5,9-7,3)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 3,3-3,9		2250 7,4-8,0
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2250 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2730-2870 2525 2250 1500 +1000 600	0 (8,0-16,0) 38,5-40,5 (37,2-41,8) (41,7-46,3) 33,5-34,5 (31,7-36,3) (21,0-27,0)	0,75 0,75 0,75 0,75 0,3 0
switch-off	2250	0	
Idle stop	1200 475	max. 5,0 (5,0-13,0)	
End stop	440 520		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	4,4
XK	18,4-20,4
XL	10,0-13,6

Observations

LDA-stroke 4,0 mm
+ Use adjusting nut
(46) to correct.

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 VWV 1,6h

1. Edition

En

VE 4/9 F 2250 R 78

0 460 494 062/063

 supersedes
 company: **VWV**
 engine: **086T-1,6**

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting -- mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	4,0-4,4 mm	0,75	
1.2 Supply-pump pressure	1500	5,5-6,1 bar (kgf/cm ²)	0,75	
1.3 Full-load delivery with charge-air pressure	600	23,5-24,5 cm ³ /1000 strokes	0	
Full-load delivery without charge-air pressure	1500	43,5-44,5 cm ³ /1000 strokes	0,75	2,5(3,0)
1.4 Idle regulation	475	7,0-11,0 cm ³ /1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min.35,0 cm ³ /1000 strokes	0	
1.6 Start	2525	9,0-15,0 cm ³ /1000 strokes	0,75	
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=0,75bar	n = rev/min mm	1000 1,9-2,7(1,6-3,0)	1500 (3,5-4,9)	2250 6,2-7,0(5,9-7,3)
2.2 Supply pump LDA=0,75bar	n = rev/min bar (kgf/cm ²)	600 3,3-3,9		2250 7,4-8,0
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2250 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2730-2870 2525 2250 1500 +1000 600	0 (8,0-16,0) 38,5-40,5 (37,2-41,8) (41,7-46,3) 33,5-34,5 (31,7-36,3) (21,0-27,0)	0,75 0,75 0,75 0,75 0,3 0
switch-off	2250	0	
Idle stop	1200 475	max. 5,0 (5,0-13,0)	
End stop	440 520		

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	4,4
✱ XK	18,4-20,4
✱ XL	10,0-13,6

Observations

 LDA-stroke 4,0 mm
 + Use adjusting nut
 (46) to correct.

2.4 Solenoid	cut-in voltage min 10 V rated voltage 12V
--------------	--

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VWV 1,6L

1. Edition

En

VE 4/9 F 2250 R 79-1
R 79-1 P0 460 494 100
0 460 494 101

Overflow temperature 45° C

supersedes -
company: VWV
engine: 086 T-1,6-Autom.

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting -- mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	4,0-4,4 mm	0,75	
1.2 Supply-pump pressure	1500	5,5-6,1 bar (kgf/cm ²)	0,75	
1.3 Full-load delivery with charge air pressure	600	23,5-24,5 cm ³ /1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1500	43,5-44,5 cm ³ /1000 strokes	0,75	
1.4 Idle regulation	475	7,0-11,0 cm ³ /1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min. 35,0 cm ³ /1000 strokes	0	
1.6 Start	2525	9,0-15,0 cm ³ /1000 strokes	0,75	
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=0,75bar	n = rev/min mm	1000 1,9-2,7(1,6-3,0)	1500 (3,5-4,9)	2250 6,2-7,0(5,9-7,3)
2.2 Supply pump LDA=0,75bar	n = rev/min bar (kgf/cm ²)	1600 3,3-3,9		2250 7,4-8,0
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2250 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)
End stop	2730-2870 2525 2250 1500 +1000 600	0 (8,0-16,0) 38,5-40,5 (37,2-41,8) (4,7-46,3) 33,5-34,5 (31,7-36,3) (21,0-27,0)	0,75 0,75 0,75 0,75 0,3 0
switch-off	2250	0	
Idle stop	1200 475	max. 10,0 (5,0-13,0)	0
End stop	440 520		
2.4 Solenoid	cutoff voltage min. 10 V rated voltage 12V		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max. 4,4
⌘ XK	18,4-20,4
⌘ XL	10,4-12,7

Observations

+ LDA-stroke 4,0 mm
Use adjusting nut
(46) to correct.

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Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWV 2,0b

1. Edition

En

VE 5/10 F 2400 L 45-1 (P)

0 460 405 007; 008

supersedes

company: VW/Volvo

engine: 069.3

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,14 mm \pm 0,02 (0,04)

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	2,6-3,0 mm		
1.2 Supply-pump pressure	1400	4,9-5,6 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1400	33,5-34,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	375	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 56,0 cm ³ /1000 strokes		
1.6 Start	2500	22,0-26,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,4-2,4(1,2-2,6)	1400 (2,1-3,5)	2400 5,1-5,9(4,8-6,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 2,8-3,4		2400 7,4-8,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2400 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2650 2500 2400 1400 750	max. 13,0 (20,0-28,0) 28,0-31,0 (27,2-41,8) 33,5-34,5 (31,7-36,3) 24,5-27,5 (23,0-29,0)	
switch-off	2400	0	
Idle stop	500 375	max. 3,0 (4,0-12,0)	
End stop	400 500		

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,7-5,9
MS	1,7-1,9
SVS	max. 3,0
X XK	18,5-20,5
B X XL	9,0-12,5

Observations

2.4 Solenoid

cut-in voltage min. 10 V
rated voltage 12 V

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⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VW 2,0b1

1. Edition

En

VE 5/10 F 2400 L 45 (P)

0 460 405 005; 006

supersedes -

company: VW/Volvo

engine: 069.3

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,14 mm \pm 0,02 (0,04)

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	2,6-3,0 mm		
1.2 Supply-pump pressure	1400	4,9-5,6 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1400	33,5-34,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	375	6,0-8,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.56,0 cm ³ /1000 strokes		
1.6 Start	2500	22,0-26,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,4-2,4 (1,2-2,6)	1400 (2,1-3,5)	2400 5,1-5,9 (4,8-6,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 2,8-3,4		2400 7,4-8,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110 (40-125)		2400 55-110 (40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2650 2500 2400 1400 750	max.13,0 (20,0-28,0) 28,0-31,0 (27,2-31,8) (31,7-36,3) 24,5-27,5 (23,0-29,0)	
switch-off	2400	0	
Idle stop	500 375	max.3,0 (4,0-12,0)	
End stop	400 500	min.23,0 max.23,0	

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,7-5,9
MS	1,7-1,9
SVS	max.3,0
XK	18,5-20,5
XL	9,0-12,5

Observations

2.4 Solenoid cut-in voltage min.10 V
rated voltage 12V

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Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWV 2,0a

1. Edition

En

VE 5/10 F 2400 L 35 (P)

0 460 405 001; 002

supersedes VWV
company: Audi 100
engine:

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,14 mm \pm 0,02 (0,04)

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	2,6-3,0 mm		
1.2 Supply-pump pressure	1400	5,0-5,6 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1400	33,5-34,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	375	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 56,0 cm ³ /1000 strokes		
1.6 Start	2500	22,0-26,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,4-2,4(1,2-2,6)	1400 (2,1-3,5)	2400 5,1-5,9(4,8-6,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 2,8-3,4		2400 7,4-8,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2400 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2650 2500 2400 1400 750	7,0-11,0 (5,0-13,0) (20,0-28,0) 28,0-31,0 (27,2-31,8) (31,7-36,3) 24,5-27,5 (23,0-29,0)	
switch-off	2400	0	
Idle stop	500 375	max. 3,0 (4,0-12,0)	
End stop	400 500	min. 23,0 max. 23,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	--
KF	5,7-5,9
MS	1,7-1,9
SVS	max. 3,0
XK	18,5-20,5
XL	9,0-12,5

Observations

2.4 Solenoid	cut-in voltage min. 10,0 V rated voltage 12V
--------------	---

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 MAN 3,7d
1. Edition

En

Testoil-ISO 4113

VE 4/10 F 900 R 57-3

0 460 404 016

supersedes -

company: MAN

engine: D 0224 ME

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	850	4,5-4,9 mm		
1.2 Supply-pump pressure	850	4,9-5,5 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	850	57,0-58,0 cm ³ /1000 strokes		2,5(3,5)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	350	10,0-14,0 cm ³ /1000 strokes		2,5(3,5)
1.5 Full-speed regulation	100	min. 60,0 cm ³ /1000 strokes		
1.6 Start	900	45,0-51,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	500 1,7-2,5(1,4-2,8)	850 (4,0-5,4)	900 4,8-5,6(4,5-5,9)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 3,3-3,9		
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		900 55-110(40-125)

2.3 Fuel deliveries			
Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	930	max. 10,0	
	900	(43,5-52,5)	
	850	57,0-58,0 (54,8-60,2)	
	500	51,5-55,5 (50,1-56,9)	
switch-off	900	0	
Idle stop	400-450 350	0 (7,5-16,5)	
End stop	400 500	min. 55,0 max. 55,0	
2.4 Solenoid	cut-in voltage rated voltage 24V		

3. Dimensions	
Designation	for assembly and adjustment mm
K	--
KF	5,7-5,9
MS	1,1-1,3
SVS	3,9-4,1
KK	25,0-27,0
XL	13,2-16,5
Observations pushing electromagnet 24 V	

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 MAN 3,7A
1. Ausgabe

En

Testoil-ISO 4113

VE 4/10 F 1500 R 42
0 460 404 007

superseded
company MAN
engine 0 0224 M

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm \pm 0,02(0,04) mm

see VDT-W-460/

1. Settings	Rot speed rev/min	Settings	Charge-air press bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1000	5,3-5,7 mm		
1 2 Supply pump pressure	1000	5,5-6,1 bar (kgf/cm ²)		
1 3 Full-load delivery without charge-air pressure	1000	61,5-62,5 cm ³ /1000 strokes		2,5(3,5)
Full-load delivery with charge-air pressure	--	-- cm ³ /1000 strokes		
1 4 Idle speed regulation	350	10,0-14,0 cm ³ /1000 strokes		2,5(3,5)
1 5 Start	100	min. 60,0 cm ³ /1000 strokes		
1 6 Full-load speed regulation	1650	7,0-13,0 cm ³ /1000 strokes		
1 7 Load-dependent start of delivery	--	--		

2. Test Specifications

checking values in brackets ()

2 1 Timing device	n = rev/min mm	600 2,6-3,4(2,3-3,7)	1000 (4,8-6,2)	1400 7,6-8,4(7,3-8,7)
2 2 Supply pump	n = rev/min bar (kgf/cm ²)	600 3,6-4,2		1500 7,0-7,6
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1500 55-110(40-125)

2 3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)
End stop	1700-1800 1650 1550 1500 1000 600	0 (5,5-14,5) max. 60,0 68,5-71,5 (67,35-72,65) (59,35-64,65) 57,25-60,75(55,6-62,4)	
switch-off	1500	0	
Idle stop	380-430 350	0 (7,5-16,5)	
Endanschlag	400 470		
2 4 Solenoid	max cut-in voltage test voltage	xxx min. 10,0 V Nennspannung 12,0 V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	--
KF	5,7-5,9
MS	1,3-1,5
SVS	max. 2,0
XK	18,6-20,6
XL	9,7-13,5

Observations

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 FIA 5,5b

1. Edition

En

46

VE 5/11 F 1125 R 58-1

0 460 415 002

supersedes

company:

engine:

Fiat

8055.04.250

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	900	4,8-5,2 mm		
1.2 Supply-pump pressure	900	4,5-5,1 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	900	65,0-66,0 cm ³ /1000 strokes		2,5(3,5)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	350	11,5-15,5 cm ³ /1000 strokes		2,5(3,5)
1.5 Full-speed regulation	100	min. 70,0 cm ³ /1000 strokes		
1.6 Start	1175	35,0-41,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	400 1,1-1,9(0,8-2,2)	900 (4,3-5,7)	1100 6,3-7,1(6,0-7,4)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,7-3,3		1100 5,5-6,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1125 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1270-1370 1175 1125 900 500	0 (33,5-42,5) 63,2-65,8 (61,8-67,2) (62,8-68,2) 54,25-57,75(52,6-59,4)	
switch-off	1125	0	
Idle stop	420-500 350	0 (9,0-18,0)	
End stop	150 250	min. 70,0 max. 70,0	
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	--
KF	5,4-5,6
MS	1,5-1,7
SVS	4,3-4,5
XK	25,0-27,0
XL	9,2-12,5

Observations

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 FIA 1,3 A

1. Edition

En

VE 4/8 F 2500 R 61

0 460 484 006

 supersedes FIAT/FIASA
 company: X8/29
 engine:

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1600	5,6-6,0 mm		
1.2 Supply-pump pressure	1600	4,5-5,1 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1600	20,0-21,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	350	8,0-14,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 29,0 cm ³ /1000 strokes		
1.6 Start	2650	9,0-15,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	1600	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 2,4-3,2(2,1-3,5)	1600 (5,1-6,5)	2000 7,8-8,4(7,4-8,8)	2400 9,4-10,2(9,1-10,5)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 1,1-1,7			2500 7,2-7,8
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)			2500 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2800-2950		
	2750	2,0-8,0 (1,0-9,0)	
	2650	(8,0-16,0)	
	2500	19,3-21,7 (18,2-22,8)	
	2000	20,0-22,0 (18,7-23,3)	
	1600	(18,2-22,8)	
	600	16,0-19,0 (14,5-20,5)	
switch-off	2500	0	
Idle stop	550	0	
	450	max. 4,0	
	350	(7,0-15,0)	
End stop	400	min. 24,0	
	500	max. 26,0	

2.4 Solenoid

cut-in voltage

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,0-3,2
KF	5,7-5,9
MS	1,4-1,5
SVS	max. 3,0
+FH	1,8-2,4
XK	20,2-22,2
XL	8,8-12,2

Observations

 + operating stroke
 (cold-start accel.)

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 FIA 1,7 A

1. Edition

En

VE 4/9 F 2300 R 54

0 460 494 044

Overflow temperature 45° C

supersedes -

company: Fiat

engine: X 8/28

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting -- mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	4,3-4,7 mm		
1.2 Supply-pump pressure	1500	5,1-5,7 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	34,2-35,2 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	350	8,0-12,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.48,0 cm ³ /1000 strokes		
1.6 Start	2400	16,0-22,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	1500	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	800 1,8-2,6(1,5-2,9)	1500 (3,8-5,2)	2300 7,1-7,9(6,8-8,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,5-3,1		2300 6,9-7,5
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2300 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2500 2400 2250 1500 600	6,0-12,0 (5,0-13,0) (15,0-23,0) 28,0-30,0 (26,7-31,3) (32,4-37,0) 23,5-26,5 (22,0-28,0)	
switch-off	2300	0	
Idle stop	400-540 400 350	0 max.4,0 (6,0-14,0)	
End stop	400 480		
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V	

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,7-1,9
SVS	max.3,5
$\overset{A}{\times}$ XK	20,1-22,1
$\overset{B}{\times}$ XL	9,5-13,3

Observations

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VWV 2,3 b

1. Edition

En

VE 6/10 F 2400 L 32-1 (P)

0 460 406 009; 010

supersedes
company: VW

engine: 087/10 Autom.

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

-- mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,0-3,4 mm		
1.2 Supply-pump pressure	1500	5,1-5,9 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	27,0-28,0 cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	-	- cm ³ /1000 strokes		2,5(3,0)
1.4 Idle regulation	350	10,0-14,0 cm ³ /1000 strokes		
1.5 Full-speed regulation	100	min. 45,0 cm ³ /1000 strokes		2,5(3,0)
1.6 Start	2600	15,5-21,5 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 0,8-1,6(0,5-1,9)	1500 (2,5-3,9)	2000 4,5-5,3(4,2-5,6)	2400 5,4-6,2(5,1-6,5)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,7-3,5			2400 6,6-7,4
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)			2400 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2700 2600 2400 1500 750	7,0-11,0 (14,5-22,5) 23,5-25,5 (22,2-26,8) (25,2-29,8) 26,5-29,5 (25,0-31,0)	
switch-off	2400	0	
Idle stop	400 350	3,0-9,0 (8,0-16,0)	
End stop	400 500	min.30,0 max.30,0	
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	6,4-6,6
MS	1,4-1,6
SVS	max.3,0
Ax XK	18,5-20,5
Bx XL	9,2-12,9
Observations	
Stop check (lever) at n = 2400 min/1	

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VMA

1. Edition

En

VE 5/11 F 2150 L 101

0 60 415 003

supersedes -

company: VM-Cento

engine: HR 588 HT

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1800	5,9-6,3 mm	0,75	
1.2 Supply-pump pressure	1800	6,3-6,9 bar (kgf/cm ²)	0,75	
1.3 Full-load delivery with charge-air pressure	600	32,5-35,5 cm ³ /1000 strokes	0	2,5(4,0)
Full-load delivery without charge-air pressure	2000	38,5-39,5 cm ³ /1000 strokes	0,75	
1.4 Idle regulation	400	9,0-13,0 cm ³ /1000 strokes	0	2,5(4,0)
1.5 Full-speed regulation	100	min. 50,0 cm ³ /1000 strokes	0	
1.6 Start	2400	11,5-17,5 cm ³ /1000 strokes	0,75	
1.7 Load-dependent port-closing	-	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,7-2,5(1,4-2,8)	1500 4,5-5,1 (4,1-5,5)	1800 (5,4-6,8)	2150 7,5-8,3(7,2-8,6)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,3-2,9			2150 7,5-8,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)			2150 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2450	3,0-9,0 (1,5-10,5)	0,75
	2400	(10,0-19,0)	0,75
	2150	35,7-38,3 (34,3-39,3)	0,75
	2000	(36,3-41,7)	0,75
	1500	42,7-45,3 (41,3-46,7)	0,75
	700	40,5-43,5 (38,6-45,4)	0,3
	600	(30,6-37,4)	
switch-off	2150	0	
Idle stop	800 400	max. 3,0 (6,5-15,5)	
End stop	420 500		
2.4 Solenoid	cut-in voltage min. 10,0 V rated voltage 12V		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,9-6,1
MS	0,9-1,1
SVS	3,0
A x XK	20,2-22,2
B x XL	9,7-13,1

Observations

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 STE 5,0d

1. Edition

En

VE 6/11 F 1150 R 92

0 460 416 020

supersedes -

company: Steyr

engine: WD 611.85

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1000	5,5-5,9 mm		
1.2 Supply-pump pressure	1000	6,2-6,8 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1100	65,0-66,0 cm ³ /1000 strokes		2,5(4,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	300	14,0-18,0 cm ³ /1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 65,0 cm ³ /1000 strokes		
1.6 Start	1200	24,5-30,5 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	700 1,9-2,7(1,6-3,0)	1000 (5,0-6,4)	1150 7,0-7,8(6,7-8,1)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	300 2,6-3,2		1150 7,0-7,6
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1150 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)
End stop	1250-1300 1200 1100 800 500	0 (23,0-32,0) (62,8-68,2) 61,0-63,0 (59,3-64,7) 57,5-60,5 (55,6-62,4)	
switch-off	1150	0	
Idle stop	360-420 300	0 (11,5-20,5)	
End stop	200 280		
2.4 Solenoid	cut-in voltage		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	--
KF	5,2-5,4
MS	1,3-1,5
SVS	max. 6,0
* XK	20,2-22,2
B X XL	10,5-13,8

Observations

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 SOF 2,5

1. Edition

En

VE 4/9 F 2200 R 88

0 460 494 091

supersedes
company: Sofim
engine: 8/44.65.201

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	2100	8,3-8,7 mm		
1.2 Supply-pump pressure	2100	7,0-7,6 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	2100	30,5-31,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	350	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 30,0 cm ³ /1000 strokes		
1.6 Start	2400	19,0-25,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	2100	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	400 2,0-3,0(0-5,5)	1200 4,9-5,5(2,9-7,5)	2100 (6,2-10,8)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,9-3,5		2200 7,3-7,9
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2200 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2550 2400 2200 2100 1200 600	max. 4,0 (18,0-26,0) 29,8-31,8 (28,5-33,1) (28,7-33,3) 34,5-37,5 (33,7-38,3) 25,0-29,0 (24,0-30,0)	
switch-off	2200	0	
Idle stop	410-500 350	0 (4,0-12,0)	
End stop	400 500		
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	mm
K	--
KF	5,7-5,9
MS	0,9-1,1
SVS	max. 2,6
+FH	1,8-2,4
* XK	25,0-27,0
* XL	8,9-12,3

Observations

+ operating stroke
(cold-start accel.)

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 MAN 5,6a1
1. Edition

En

Testoil-ISO 4113

VE 6/11 F 1500 R 55
0 460 416 009

Overflow temperature 45° C

supersedes
company: MAN
engine: D 0226 MF

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,6 mm

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1000	6,0-6,4 mm		
1.2 Supply-pump pressure	1000	5,7-6,3 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1000	63,5-64,5 cm ³ /1000 strokes		2,5(4,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	300	8,0-12,0 cm ³ /1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 50,0 cm ³ /1000 strokes		
1.6 Start	1600	24,0-30,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	600	1000	1400
	mm	3,7-4,5(3,4-4,8)	(5,5-6,9)	8,9-9,7(8,6-10,0)
2.2 Supply pump	n = rev/min	600		1500
	bar (kgf/cm ²)	4,2-4,8		7,0-7,6
Overflow delivery	n = rev/min	500		1500
	cm ³ /10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries			
Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1680 1600 1500 1000 600	max. 8,0 (22,5-31,5) 69,25-71,75(67,8-73,2) (61,3-66,7) 45,75-49,25(44,1-50,9)	
switch-off	1500	0	
Idle stop	390-460 300	0 (5,5-14,5)	
End stop	450 530		

2.4 Solenoid	cut-in voltage	min. 20,0 V rated voltage 24,0 V
--------------	----------------	-------------------------------------

3. Dimensions	
Designation	for assembly and adjustment mm
K	--
KF	5,7-5,9
MS	1,2-1,4
SVS	max. 4,7
K	25,0-27,0
L	11,8-15,2
Observations	
pushing electromagnet	

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E5

E5

Test Specifications

Distributor-type

Fuel-injection Pumps

Testoil-ISO 4113

VE 6/11 F 750 R 55-2

0 460 416 017

 supersedes
 company: MAN
 engine: D 0226 ME

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,6 mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	750	4,0-4,4 mm		
1.2 Supply-pump pressure	600	4.3-4,9 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	700	54,5-55,5 cm ³ /1000 strokes		3,5 (4,0)
Full-load delivery without charge-air pressure	-	- cm ³ /1000 strokes		
1.4 Idle regulation	300	7,0-13,0 cm ³ /1000 strokes		3,0 (4,0)
1.5 Full-speed regulation	100	min. 50 cm ³ /1000 strokes		
1.6 Start	750	44,0-50,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	400 1,0-1,8(0,7-2,1)	750 (3,5-4,9)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	300 2,7-3,3	750 5,0-5,6
Overflow delivery	n = rev/min cm ³ /10 s		750 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	820 750 700 600	max. 2,0 (42,5-51,5) (52,4-57,6) 49,0-53,0(47,6-54,4)	
switch-off	750	0	
Idle stop	460 300	max. 2,0 (5,5-14,5)	
End stop	400 500	min. 60 max. 60	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,7-5,9
MS	1,2-1,4
SVS	4,6-4,8
K	25,0-27,0
L	11,2-14,2

Observations

2.4 Solenoid

cut-in voltage

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 MAN 5,6d
1. Edition

En

Testoil-ISO 4113

VE 6/11 F 900 R 55-3

0 460 416 018

supersedes
company: MAN
engine: D 0226 ME

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0,6 mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	850	4,9-5,3 mm		
1.2 Supply-pump pressure	850	5,5-6,1 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	880	55,0-56,0 cm ³ /1000 strokes		2,5(4,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	300	7,0-13,0 cm ³ /1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 50,0 cm ³ /1000 strokes		
1.6 Start	900	44,0-50,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 3,3-4,1(3,0-4,4)	850 (4,4-5,8)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 4,5-5,1	
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)	500 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	950-1000 900 880 600	0 (41,5-51,5) (52,8-58,2) 40,5-44,5 (39,1-45,9)	
switch-off	900	0	
Idle stop	360-410 300	0 (5,5-14,5)	
End stop	450 530	min.45,0 max.44,5	
2.4 Solenoid	cut-in voltage	min.10,0 V rated voltage 12V	

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,7-5,9
MS	1,2-1,4
SVS	4,6-4,8
AK	25,0-27,0
XL	11,8-15,2

Observations
pushing electromagnet

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E7

E7

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 MAN 5,6e
1. Edition

En

Testoil-ISO 4113

VE 6/11 F 1500 R 55-4

0 460 416 019

supersedes -

company: MAN

engine: D 0226 ME

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,6 mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1000	6,0-6,4 mm		
1.2 Supply-pump pressure	1000	5,7-6,3 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1000	58,5-61,5 cm ³ /1000 strokes		2,5(4,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	300	7,0-13,0 cm ³ /1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 50,0 cm ³ /1000 strokes		
1.6 Start	1500	30,5-36,5 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 3,7-4,5(3,4-4,8)	1000 (5,5-6,9)	1400 8,9-9,7(8,6-10,0)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 4,2-4,8		1400 7,2-7,8
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1500 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1570-1610 1500 1400 1000 600	0 (29,0-38,0) 64,5-67,5 (63,3-68,7) (57,3-62,7) 39,5-43,5 (38,1-44,9)	
switch-off	1500	0	
Idle stop	390-460 300	0 (5,5-14,5)	
End stop	450 530	min.45,0 max.44,5	

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,7-5,9
MS	1,2-1,4
SVS	4,6-4,8
AXK	25,0-27,0
BXL	13,5-16,8

Observations
pushing electromagnet

2.4 Solenoid	cut-in voltage min.10,0 V rated voltage 12V
--------------	--

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E8

E 8

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 MAN 5,6 b

2. Edition

En

VE 6/11 F 1500 R 49
0 460 416 008

Overflow temperature 45° C

 supersedes MAN
 company: D 0226 M
 engine:

 Setting of the pointer at a stroke of 1 mm in
 relation to outlet "A".

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,6 mm \pm 0,02(0,04) mm

see VDT-W-460/..

Testoil ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1000	6,0-6,4 mm		
1.2 Supply-pump pressure	1000	5,7-6,3 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	- cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1000	63,5-64,5 cm ³ /1000 strokes		2,5 (4,0)
1.4 Idle regulation	300	8,0-12,0 cm ³ /1000 strokes		2,5 (4,0)
1.5 Full-speed regulation	1550	52,0-58,0 cm ³ /1000 strokes		
1.6 Start	100	min. 60,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 3,8-4,6 (3,5-4,9)	1000 (5,5-6,9)	1400 8,7-9,5 (8,4-9,8)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 3,2-3,8	1500 7,3-7,9	
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110 (40-125)	1500 55-110 (40-125)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1680 1630 1550 1500 1000 600	max. 4,0 12,0-21,0 (50,5-59,5) 69,5-71,5 (67,9-73,2) (61,3-66,7) 46,0-49,0 (44,1-50,9)	
switch-off	1500	0	
Idle stop	400-470 300	0 (5,5-14,5)	
End stop	370 470		

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,7-5,9
MS	1,4-1,6
SVS	max. 4,6
XX XK	18,6-20,6
XX XL	9,0-12,8

Observations

 Pulling
 electromagnet

2.4 Solenoid

 cut-in voltage min 20,0 V
 rated voltage 24,0 V

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

En

46

WPP 001/4 MAN 5,6a
1. Edition

Testoil-ISO 4113

VE 6/11 F 1500 R55-1 Overflow temperature 45° C

0 460 416 016

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Pre-stroke setting 0,6 mm \pm 0,02(0,04) mm

supersedes -

company: MAN

engine: D 0226 ME

Test Instructions and Test Equipment

see VOT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1000	6,0-6,4 mm		
1.2 Supply-pump pressure	1000	5,7-6,3 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1000	63,5-64,5 cm ³ /1000 strokes		2,5(4,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	300	8,0-12,0 cm ³ /1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 50,0 cm ³ /1000 strokes		
1.6 Start	1600	24,0-30,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 3,7-4,5(3,4-4,8)	1000 (5,5-6,9)	1400 8,9-9,7(8,6-10,0)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 4,2-4,8		1500 7,0-7,6
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1500 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1680 1600 1500 1000 600	max. 8,0 (22,5-31,5) 69,25-71,75(67,8-73,2) (61,3-66,7) 45,75-49,25(44,1-50,9)	
switch-off	1500	0	
Idle stop	390-460 300	0 (5,5-14,5)	
End stop	450 530		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	--
KF	5,7-5,9
MS	1,4-1,6
SVS	max. 4,6
KK	25,0-27,0
XL	11,8-15,2

Observations

Pulling
electromagnet

2.4 Solenoid	cut-in voltage 20,0 V rated voltage 24,0 V
--------------	---

E10

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E40

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 STE 6,5a

1. Edition

En

VE 6/11 F 1300 R 98 Overflow temperature 45° C
0 460 416 021

supersedes -
company: Steyr
engine: WD 612.01

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

--

mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1000	2,6-3,0 mm		
1.2 Supply-pump pressure	1000	6,1-6,7 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1280	67,0-68,0 cm ³ /1000 strokes		2,5(4,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	300	14,0-18,0 cm ³ /1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 95,0 cm ³ /1000 strokes		
1.6 Start	1450	18,0-24,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 0,9-1,7(0,6-2,0)	1000 (2,1-3,5)	1280 3,8-4,6(3,5-4,9)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	300 3,4-4,0		1300 7,2-7,8
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1300 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1500-1550 1450 1280 1000 500	0 (16,5-25,5) (64,8-70,2) (70,3-75,7) 72,0-74,0 78,5-72,5 (67,1-73,9)	
switch-off	1300	0	
Idle stop	370-430 300	0 (11,5-20,5)	
End stop	200 280		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,4-5,6
MS	1,3-1,5
SVS	max. 6,0
AK XK	20,2-22,2
XL	8,7-12,0

Observations

2.4 Solenoid

cut-in voltage

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⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 STE 4,0 F

1. Edition

En

VE 4/11 F 1200 R 94 Overflow temperature 45° C
0 460 414 003

supersedes
company: Steyr
engine: WD 411.85

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

--

mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1000	4,8-5,2 mm		
1.2 Supply-pump pressure	1000	5,6-6,2 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1000	63,0-65,0 cm ³ /1000 strokes		2,5(4,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	300	18,0-22,0 cm ³ /1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 80,0 cm ³ /1000 strokes		
1.6 Start	1300	9,5-15,5 cm ³ /1000 strokes		
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 1,4-2,2(1,1-2,5)	1000 (4,3-5,7)	1180 6,3-7,1(6,0-7,4)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 3,0-3,6		1180 6,6-7,2
Overflow delivery	n = rev/min cm ³ /10 s	500 55-100(40-125)		1200 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1320-1370 1300 1180 1000 500	0 (8,0-17,0) 65,5-66,5 (63,3-68,7) (61,3-66,7) 56,0-59,0 (54,1-60,9)	
switch-off	1200	0	
Idle stop	350-410 300	0 (15,5-24,5)	
End stop	200 280	min.80,0 max.80,0	
2.4 Solenoid	cut-in voltage		

3. Dimensionsfor assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,2-5,4
MS	0,9-1,1
SVS	max.3,0
x XK	20,2-22,2
g x XL	10,3-13,8

Observations

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E12

E12

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 1,6c

1. Edition

En

VE 4/9 F 2400 R 66-13

Overflow temperature 45° C

0 460 494 084

supersedes VWW
company: Passat-Autom.
engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

--

mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,1-3,5 mm		
1.2 Supply-pump pressure	1500	4,9-5,5 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	33,0-34,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	475	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 35,0 cm ³ /1000 strokes		
1.6 Start	2600	11,0-17,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-2,5)	1500 (2,6-4,0)	2400 6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,1-2,7		2400 7,0-7,6
Overflow delivery	n = rev/min cm ³ /10 s	500 55-115(40-125)		2400 55-115(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2700 2600 2400 1500 600	2,0-10,0 (2,0-10,0) (10,0-18,0) 27,7-30,3 (26,7-31,3) (31,2-35,8) 21,5-24,5 (20,0-26,0)	
switch-off	2400	0	
Idle stop	1200 650 475	max. 7,0 max. 5,0 (4,0-12,0)	
End stop	400 500		
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max. 2,5
+FH	1,8-2,4
* XK	18,4-20,4
* XL	10,4-12,8

Observations
+ operating stroke
(cold-start accel.)

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E13

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 IHC 6,6a

1. Edition

En

VE 6/12 F 1250 R 38 (P)

Values only apply to test nozzle-and-holder assembly

1 688 901 020 Overflow temperature 45° C

0 450 426 001/008 Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

supersedes IHC

company: DT 402/3994

engine:

Test Instructions and Test Equipment

Pre-stroke setting 0,4 mm \pm 0,02 (0,04) mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1000	3,5-4,1 mm		
1.2 Supply-pump pressure	1000	4,9-5,5 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	900	117,5-118,5 cm ³ /1000 strokes		2,5(4,5)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	500	15,0-21,0 cm ³ /1000 strokes		2,5(4,5)
1.5 Full-speed regulation	100	min. 95,0 cm ³ /1000 strokes		
1.6 Start	1300	56,0-64,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 1,3-2,1(1,0-2,4)	1000 (3,1-4,5)	1200 4,6-5,4(4,3-5,7)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 3,2-3,8		1250 5,6-6,2
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1250 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1370-1420 1300 1230 900 700 500	0 (55,0-65,0) 108,5-111,5 (107-113) (115-121) 97,0-101,0 (96,0-102,0) 92,0-96,0 (90,2-97,8)	
switch-off	1250	0	
Idle stop	520-570 500	(13,0-23,0)	
End stop	260 380		
2.4 Solenoid	cut-in voltage		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	--
KF	5,4-5,6
MS	0,8-1,0
SVS	4,6-6,0
AK XK	20,2-22,2
EX XL	9,6-12,9

Observations

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Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 1 c 1

3. Edition

En

Testoil-ISO 4113

PES 2 A 80 D 310/3 RS1322 EP/RSV..2011DL (1-2)
 PES 3 A 75 ..1185, 1320 EP/RSV 325-1000 A8B733D(3)
 PES 4 A 75 ..1183 EP/RSV 325-1400 A8B742D(4)
 PES 6 A 75 ..1197 EP/RSV..694D, 742D (5-6)
 PES4A80..1300, PES3A80..1324, PES6A75..1326 (7)

supersedes 5.78
 company K H D
 engine F.. L912

Type designations and notes
 see page 5!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,90-2,00 mm (from BDC)
 (1,85-2,05)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	12	5,2 - 5,6	0,4	9	3,1 - 3,5	
	9	2,7 - 3,5		6	0,1 - 0,6	
200	9	0,7 - 1,4		9	0,6 - 1,3	

Adjust the fuel delivery from each outlet according to the values in []

B. Governor Settings

325-1400 A8B2011D (1)

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.66	1400	12,0	without auxiliary spring			ca.20	325	5,5	1400	0
	1430	8,5					200	19 - 21		
	1460	4,8					325	5,2-5,8	600	0,9-1,
	1440	ca. 10,5					450	2,7-4,1		
⑤	1490	ca. 4,0	with auxiliary spring				660	0 - 1,5		
	1600	0,3 - 1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min							
rev/min	cm ³ /1000 strokes			rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
(1) 1400	60,0 - 61,0 (58,5 - 62,5)	1440-1450*		750	54,5 - 56,5 (52,5 - 58,5)			325	5,5

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.78

B. Governor Settings

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.	900	16,0	without auxiliary spring			ca.26	325	6,0	880	0
	950	10,0					150	19 - 21	400	0,9-1,1
	980	4,0					325	5,7-6,3		
⑤	900	ca. 11,6	with auxiliary spring				450	1,5-3,7		
	1000	ca. 4,0					550	0 - 1		
	1080	0,3 -1,5								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat	③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2		4	5	6	7	8	9
(2) 900	55,0 - 56,0 (53,5 - 57,5)	940-950 *	⑥a				325	6,0

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113**B. Governor Settings**

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.48	1000	16,0	without auxiliary spring			ca.19	325	5,5	1000	0
	1060	10,0					100	19 - 21	500	0,9-1,1
	1110	4,0					325	5,2-5,8		
⑤	1000	ca. 9,0	with auxiliary spring				400	1,2-3,0		
	1080	ca. 4,0					500	0 - 1		
	1200	0,3 -1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat	③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2		4	5	6	7	8	9
(3) 1000	46,0 - 48,0	1040-1050 *					325	5,5

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.66	1400	12,0	without auxiliary spring			ca.20	325	5,5	1400	0
	1430	8,5					200	19 - 21	1000	0,2-0,4
	1460	4,8					325	5,2-5,8		
							450	2,8-4,1		
							660	0 - 1	500	0,9-1,1
⑤	1420	9,2-10,4	with auxiliary spring							
	1500	2,0- 3,4								
	1580	0,3- 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2		4	5	6	7	8	9
(4) 1400	54,5 - 56,5	1430-1440 *	800	49,5 - 52,5			325	5,5
			⑥a					

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

325-1150 A8B694D (5)

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.54	1150	12,0	without auxiliary spring			ca.21	325	5,5	1150	0
	1190	7,8					200	19 - 21	450	0,9-1,1
	1210	5,0					325	5,2-5,8		
							400	1,6-3,5		
							500	0 - 1		
⑤	1130	8,0-9,6	with auxiliary spring							
	1200	5,0-7,5								
	1210	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2		4	5	6	7	8	9
(5) See page 5!		1160-1170					325	5,5

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	Control rod travel
1	2	3	4	5	6	7	8	9	10	11
ca.66	1400	12,0	without auxiliary spring			ca.20	325	5,5	1400	0
	1430	8,5					200	19 - 21	1000	0,2-0,4
	1460	4,8					325	5,2-5,8	500	0,9-1,1
	1420	9,2-10,4	with auxiliary spring				450	2,8-4,1		
	1500	2,0- 3,4					660	0 - 1		
⑤	1580	0,3- 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational speed limitat	③a Fuel delivery characteristics		Starting fuel deliver Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min					Control rod travel mm	
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	9
1	2		4	5	6	7	8	
(6) 1400	58,0 - 60,0	1430-1440*	800	51,0 - 54,0			325	5,5
			⑥a					

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113**B. Governor Settings**

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control		
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	Control rod travel	
1	2	3	4	5	6	7	8	9	10	11	
⑤											

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational speed limitat	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min					Control rod travel mm	
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	9
1	2		4	5	6	7	8	

Checking values in brackets

* 1 mm less control rod travel than col 2

1. Type designations and power outputs

Engine Pump	Output at speed	- Manufacturer Governor	Item as or
<u>F 2 L 912 - 30 kw (38HP) at 2400 min.</u>			
PES 2 A 80 D 310/3 RS 1322		EP/RSV 325-1400 A 8 B 201 DL	1
<u>F 2 L 912 - 18 kw (25HP) at 1800 min.</u>			
PES 2 A 80 D 310/3 RS 1322		EP/RSV 325-900 A 7 B 2011 DL	2
<u>F 3 L 912 - 27 kw (37HP) at 2000 min. - Fendt</u>			
PES 3 A 75 D 410/3 RS 1185		EP/RSV 325-1000 A 8 B 733 DL	3
<u>F 4 L 912 - 54 kw (73HP) at 2800 min. - Berliet</u>			
PES 4 A 75 D 410/3 RS 1183		EP/RSV 325-1400 A 8 B 742 DL	4
<u>F 6 L 912 -</u>			
PES 6 A 75 D 410/3 RS 1197		EP/RSV 325-1150 A 8 B 694 DL	5 - KHD 1 c
<u>F 6 L 912 - 81 kw (110HP) at 2800 min. - Berliet</u>			
PES 6 A 75 D 410/3 RS 1197		EP/RSV 325-1400 A 8 B 742 DL	6
<u>F 4 L 912 -</u>			
PES 4 A 80 D 410/3 RS 1300		EP/RSV..	7 - KHD 1 c
<u>F 3 L 912 -</u>			
PES 3 A 80 D 410/3 RS 1324		EP/RSV..	7 - KHD 1 c
<u>F 6 L 912 -</u>			
PES 6 A 75 D 410/3 RS 1326		EP/RSV..	7 - KHD 1 c

2. Notes

The remarks given under (7) and the governors (Items 1..6) are also used with the injection pumps and governors listed on KHD 1 c. The full-load deliveries for the possible combinations are given on KHD 1 c on pages 7 - 18 and on the present pages 1 - 4.

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps **(1A)** and Governors

40

WPP 001/4 MB 5,7 w5
3. Edition

En

PES 6 A 90 D 410 RS 2569

RSV 350-1400 A0B 1135 L

supersedes 8.81
company Daimler Benz
engine OM 352
92 kW (125 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

(2,20-2,40)

Port closing at prestroke 2,25-2,35 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,8+0,1	6,2-6,3	0,3(0,45)			
350	7,9-8,0	0,5-1,1	0,2(0,4)			
500	11,3-0,1	C, col.4-5	0,4(0,55)			
900	10,8-0,2	C, col.4-5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 21	350	4,1	1400	10,8+0,1
	x = 5,0						350	7,9-8,0	750	10,8+0,3
							580-640	= 2,0	500	11,3+0,1
ca. 70	1440-1450 = 9,8									
(2a)	1495-1525 = 4,0									
	1650=0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop		(6) Rotational speed limit		(3a) Fuel delivery characteristics		Starting fuel delivery (5)		(4a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
1400	62,5-63,5 (60,5-65,5)	1440-1450*	500	44,5-47,5 (42,5-49,5)	100	79,25-89,25 16,2-16,6 mm RW	-	-	-
			900	53,5-56,5 (51,5-58,5)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.82

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E20

E 20

Test Specifications Fuel Injection Pumps (1A) and Governors

40
VDT-WPP 001/4
2. Edition

En

PES 6 A 100 D 410 RS3020

EP/RSV 400-1100 A 7 B 700 L

supersedes

10.74

company

John Deere

engine

6404 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0+0,1

mm (from BDC)

Port closing mark 14 °
after port closing.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,5 - 8,8				
	6	3,2 - 4,2				
	12	12,4 - 13,4				
200	9	4,0 - 5,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control			
Degree of deflection of control lever	Control rod travel	Control rod travel				Control-lever deflection in degrees	Control rod travel		rev/min	Control rod travel		
1	mm	mm rev/min	4	5	6	7	rev/min	mm	10	mm		
ca.66	1100	12,0	without auxiliary spring			ca.26	400	6,3	1080	0		
	1120	6,2										
2a	1100	11,5-12,5							150	19-21	-	-
	1140	2,0- 5,0							400	6,0-6,6		
	1140	2,0- 5,0				430	3,0-4,6					
	1240	0,3- 1,0				500	0 - 1					

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm ³ /1000 strokes 2	⑥ Rotational speed limit Note changed to) rev/min 3	③a Fuel delivery characteristics rev/min 4	cm ³ /1000 strokes 5	Starting fuel delivery Idle rev/min 6	cm ³ /1000 strokes 7	⑤ Idle stop rev/min 8	Control rod travel mm 9
1080	107,5-109,5	1110-1120*			100	15,6-17,6	400	11,5-15,5 cm ³ /1000
			150	11,5 - 21,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

6.75

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Testoil-ISO 4113

E21

E21

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 v 3

8. Edition

En

PES 6 A 90 D 410 RS 2596

RSV 575-1250 A 1 B 618 L

supersedes

10.80

company

Daimler-Benz

engine

OM 352 A

115 kW (156 PS)

1 - 5 - 3 - 6 - 2 - 4

= -60 -12 -180-240-300° ±0,5° (± 0,75°)

Speed difference between control-rod travel reduced 1 mm

by governor and control-rod travel position 4 mm = 25-35 min/1.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1230	13,2±0,1	7,7 - 7,8	0,3(0,45)			
575	7,2-7,4	0,8 - 1,4				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.29	575	7,3		
	x =	4,0					100	min.19,0		
							575	7,2-7,4		
ca.60		1250-1260=12,2					675	1,0		
2a		1275-1295= 5,5					585-645	2,0		
		1445=0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104° F)		Note changed to							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1230	77,5-78,5 (75,5-80,5)	1250-1260*			100	16,0-16,6 mm RW			
					575	79,25-89,25 9,25-15,25			

Checking values in brackets

* 1 mm less control rod travel than col 2

2.82

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E22

E22

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,8 n 8

40

1A 1. Edition

En

PES 4 A 90 D 410 RS 2570

RSV 350-750 AOB 764 L

supersedes
company
engine

Daimler Benz
OM 314
Generating sets

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,25-2,35 \\ (2,2 - 2,4) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,3+0,1	4,8 - 4,9	0,3(0,45)			
350	8,8-9,0	1,1 - 1,7	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control lever deflection in degrees 7			3 Torque control Control rod travel rev/min mm	
2	Control rod travel mm	Control rod travel mm rev/min	4	5	6	8	rev/min	Control rod travel mm	10	11
loose	800	0,3-1,0	-	-	-	ca.15	350	8,9	-	-
	x =	3,5					100	min.19,0		
ca.26	10,3	750-755					350	8,8- 9,0		
2a	4,0	785-795					380-440	=2,0mm**		
	875	0,3-1,7								

** Set idle-speed auxiliary spring at 2 mm control-rod travel,
The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F)		6 Rotational speed limit Note changed to) rev/min		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
700	48,0-49,0 (46,0-51,0)	750-755*	-	-	100	79,25-89,25 bei 16,3- 16,7 mmRW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col 2

2.82

BOSCH

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E23

E23

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

1. Edition

En

PES 6 A 100 D 420 LS3024 EP/RSV 375-1050 A2B785D

supersedes

company

engine

Case
A 504 BDT
(210 BHP)

Test with case overflow valve!

Pay attention to special governor setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,00-2,10}{(1,95-2,15)}$ mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1050	12,0	13,9 - 14,1	0,3(0,6)			
	(+0,1)					
375	6,1	1,7 - 2,1	0,3(0,5)			
	(±0,1)					
700/600-	Sect. C, Col. 4-5		0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.42	1060	12,0	without auxiliary spring			ca.22	375	6,1	1050	0
	1100	8,8					170	19-21		
	1150	3,7					375	5,0-6,2		
②a	1095	ca. 11,0	with auxiliary spring				485	ca. 2,0	400	0,7-1,1
	1175	ca. 3,9					560	0 - 1		
	1240	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ ④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1050	139,0-141,0 (138,2-141,7)	1090-1100* (1085-1105)	700	151,0-155,0 (150,5-155,5)	100	133-139 (131-141)	375	6,1	
			600	max. 154,0 (max. 156,0)					
			1175	11,5- 17,5 (9,5- 19,5)	375	17,5-21,5 (16,5-22,5)			
			dispersion max.4(6)						

Checking values in brackets

* 1 mm less control rod travel than col 2

3.76

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Test Specifications Fuel Injection Pumps **(1A)** and Governors

WPP 001/4

40

1. Edition

En

PES 6 A 100 D 420 LS3024

EP/RSV 375-1100 A2 B798DR

supersedes -

company

engine

Case
A 504 BDT

Pay attention to special setting as per W 400/307 for Case CO.!!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,00-2,10}
(1,95-2,15) mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,8-10,9	12,6-12,8	0,3(0,6)			
375	5,9- 6,1	1,7- 2,1	0,3(0,5)			
750/600	- - -	C, col.4-5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca.22	375	5,5	1100	10,8-10,9
	x	= 4,2							750	11,5-11,7
	1140-1150	=9,8							600	11,7-11,8
	1210-1220	=4,0								
ca.43	1300	0,3-1,7								
2a										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop		(6) Rotational-speed limitat		(3a) Fuel delivery characteristics		Starting fuel delivery (5)		(4a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 9
1100	126,0-128,0 (125,0-129,0)	1140-1150*	750	134,0-138,0 (133,5-138,5)	100	133-139 (130-142)			
			600	129,0-137,0 (128,5-137,5)	375	17,5-21,5 (14,5-24,5)			
					1225	13,5-19,5 (11,5-21,5)			
								dispersion 4 (6) max.	

Checking values in brackets

* 1 mm less control rod travel than col. 2

F1

6.79

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F1

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 HOR 2,4 a
1. Edition

En

PES 3 A 80 D 410/3 RS 1336 RSV 400-1250 A0B 1123 L

supersedes -

company Holder
engine VD 6001-4
tractor A 60

1 - 2 - 3 je $120^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,7 - 1,8$ mm (from BDC) RW 9 mm
(1,65-1,85)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1230	11,0+0,1	7,0-7,1	0,2(0,35)			
400	8,2-8,4	0,9-1,5	0,2(0,3)			
Port closing difference between control-rod travel 9 mm and max. 9,0-10,0° camshaft						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 4,25	-	-	-	ca. 24	400	7,8	-	-
ca. 50	10,0	1270-1280					100	min. 19,0		
2a	4,0	1335-1365					400	8,2-8,4		
	1500	0,3-1,7					565-625	= 2,0mm		
							675	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min							
rev/min 1	cm ³ /1000 strokes 2	3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1230	70,0-71,0 (68,5-72,5)	1270-1280*	-	-	-	100	19,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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F2

F2

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4
2. Edition

En

PES 6 A 100 D 410 RS3025 EP/RSV 400-1100 A2 B765DL
Test-pressure line 6 x 2 x 600 400-1050 A2 B786DL
Inlet pressure 1.5 bar
Manifold-pressure compensator (LDA) adjustment page 2

supersedes -
company John Deere
engine 6404 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 Port closing mark cyl. 1 : 14° after port closing
(1,95-2,05) mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery with 765 DL cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery with 786 DL cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,2 (+0,1)	11,2 - 11,4	0,3(0,6)	1050-11,0 (+0,1)	= 11,2-11,4	
400	6,3 (±0,1)	1,1 - 1,5	0,3(0,5)	6,5 (±0,1)	1,1 - 1,5	
750/550-	Sect. C, Col. 4-5		0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

400-1100 A2B765DL

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm (+0,1) 11
ca.43	1100 10,8-10,9 1140 - 1150=9,8 1195 - 1205=4,0		without auxiliary spring			ca.21	400 6,3			
②a	1155 9,8 -9,9 1200 ca. 4,0 1300 0,3 -1,7						200 min. 19 400 6,2-6,4 480-535 = 2,0		1100 10,8 750 11,6 500 11,8	
			with auxiliary spring				580 0 - 1			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limitat		③a Fuel delivery characteristics		Starting fuel delivery Idle		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1100	0,8 bar 112,0-114,0	1140-1150* (1135-1155)		LDA 750	0,8 bar 121,5-124,5	100	156 - 176	400	6,3
				LDA 550	0 bar 63,0-69,0	400 1200	11,5-15,5 18,5-28,5		

Checking values in brackets see page 2

* 1 mm less control rod travel than col. 2

9.76

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The numbers denote the sequence of the tests

B. Governor Settings

400-1050 A2B786DL

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm (+0,1)
1	2	3	4	5	6	7	8	9	10	11
ca. 43	1050	11,0-11,1	without auxiliary spring			c. 22	400	6,5	1050	11,0
	1090-	1100=10,0					200	mind. 19	900	11,2
	1155-	1165= 4,0					400	6,4-6,6	750	12,0
	1095	10,0-10,1	with auxiliary spring				480-530	= 2,0		
②a	1160	ca. 4,0					570	0-1		
	1240	0,3- 1,7								

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery		⑤ ④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA	1,0 bar	1090-1100* (1085-1105)		LDA	1,0 bar	100	156-176	400	6,5
1050	112,0-114,0			750	121,5-124,5	400	11,5-15,5		
				LDA	0 bar	1150	18,5-28,5		
				550	48,0- 54,0				

Checking values in brackets

* 1 mm less control rod travel than col. 2

(1050 = 110,0-116,0)

(750 = 119,5-126,5)

(550 = 46,0- 56,0)

D. Adjustment Test for Manifold Pressure Compensator

Preliminary adjustment, dimension H = 21,8 mm

Test at n = 550 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
3025 mit 765DL	0,63	0,15	-0,1-0,2 -2,5-2,6
3025 mit 786DL	0,72	0,38	-0,9-1,1 -2,9-3,0
Switching point (hydr. measurement)	max. 0,76	mind. 0,48	10 - 11 mm RW 19 - 21 mm RW

Notes.

(1) when n = rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Check 3025 with 765DL:

(1100 = 110,0-116,0)

(750 = 119,5-125,5)

(550 = 61,0- 71,0)

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 HAN 10,8 c
4. Edition

En

PE 6 A 100 D 320 RS 3022

EP/RSV 350-1100 A4 B 1070R (1) supersedes 12.78

350-1100 A8 B 1070R (2) company MF-Hanomag
engine D 963 A2

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,80-190
(1,75-1,95) mm (from BDC) Difference between
CRT9 + 21 5,5-6,5°

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	10,5 - 11,1	0,5			
	6	3,4 - 4,6				
	12	15,6 - 17,0				
200	9	7,2 - 8,4				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

A4 ... (1)

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 70	1100 1140 1170	16,0 12,2 7,8	without auxiliary spring			ca. 30	350	7,4	1100	0
②a	1150 1250 1320	9,2-11,6 1,2- 4,1 0,3- 1,5					100 350 500 660	19-21 7,6-8,2 2,5-5,0 0 -1,5		
			with auxiliary spring						350	0,2-0,8

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min		rev/min	cm ³ /100 strokes	rev/min	cm ³ /100 strokes	rev/min	Control rod travel mm
rev/min 1	cm ³ /100 strokes 2	3		4	5	6	7	8	9
(1) 1100	150,0-152,0 (148,0-154,0)	1130-1140*				100	19-21mmRW		./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

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Testoil-ISO 4113

The numbers denote the sequence of the tests

B. Governor Settings

A8 ... (2)

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control							
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm						
1	2	3	4	5	6	7	8	9	10	11						
loose	800	0,3-1,0				ca. 24	350	5,5	600	11,5-11,6						
	x	5,5														
ca. 56	10,5	1140-1150											100	min. 19	400	12,7-13,3
	4,0	1190-1220											350	5,9-6,1		
	1360	0,3 - 1,7					485-545	= 2,0								
②a							600	0-1								

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
(2) 1100	150,0-152,0 (148,0-154,0)	1140-1150*				100	19-21mmRW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

En

Test Specifications Fuel Injection Pumps ①A and Governors

40

VDT-WPP 001/4

2. Edition

En

PES 6 A 100 D 420 LS3007 EP/RSV .. 569DR, 696DR, 724 DR
LS3024 EP/RSV .. 696DR, 724DR

supersedes 12.74
company Case
engine A 504 BDT
A 504 BDT1

Test with case overflow valve!

Governors 569 and 724 in accordance with special setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	9,1 - 9,8	0,5			
	6	3,6 - 4,8				
	12	13,6 - 14,9				
200	9	5,2 - 6,8				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

696 DR

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 . 5 6			④ Lower rated speed Control lever deflection in degrees 7			③ Torque control Control rod travel mm	
Control rod travel mm 2	Control rod travel mm rev/min 3					rev/min 8	Control rod travel mm 9		rev/min 10	mm 11
ca.58	885 13,6 930 6,8 960 1,8		without auxiliary spring			ca.30	375 8,0		875 0	
	930 6,3-8,0 960 2,5-5,3 1030 0,3-1,0						100 19-21 375 7,7-8,3 450 2,0-4,7 550		350 0,2-0,8	
②a			with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min 1 cm ³ /1000 strokes 2		⑥ Rotational-speed limit Note changed to) rev/min 3	③a Fuel delivery characteristics rev/min 4 cm ³ /1000 strokes 5	Starting fuel delivery Idle rev/min 6 cm ³ /1000 strokes 7	⑤	④a Idle stop rev/min 8 Control rod travel mm 9
875	146,5 - 149,5	880-895	900 101,0-131,0 940 12,5-20,5	100 131,0-141,0		375 16,5-22,5 ./.

Checking values in brackets

* 1 mm less control rod travel than col 2

5.77

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F7

F7

B. Governor Settings

724DR

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 42	1120	12,8	without auxiliary spring			ca. 20	375	6,0	1100	0
	1180	6,3					150	18-21		
	1210	2,5					375	5,7-6,3		
	1140	12,6-13,3	with au. spring				450	1,9-3,8	500	0,1-0,4
	1200	4,8- 6,5					550	0 - 1		
	1280	0,3- 1,0								
②a										

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1100	152,5-155,5	1140-1155		700	156,0-160,0	100	131,0-141,0	375	16,5-22,5
				600	max. 159,0				
				1225	12,5- 20,5				

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 41	1120	9,3	without auxiliary spring			ca. 19	375	5,7	1100	0
	1150	6,0					150	19,0-21,0		
	1180	3,2					375	5,4- 6,0		
	1140	9,0-9,8	with auxiliary spring				450	1,6-3,5	500	0,1-0,4
	1200	2,8-4,0					550	0 -1,0		
	1260	0,3-1,0								
②a										

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1080	91,0- 93,0	1110-1125		800	91,5-94,5	100	131,0-141,0	375	16,5-22,5
				700	max. 94,5				
				1200	14,5-22,5				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Notes on special settingTest sequence

Run pump at 100 min⁻¹ below rated speed and vent damper. (With version 2 at vent screw, with versions 1 and 3 by loosening damper bushing. Then tighten damper bushing again and with version 2 ensure that centre-punch mark on screw plug faces upwards). Switch off test bench.

Set projection of injected-quantity stop with respect to stop plate (dimension "a").

Set idle before full-load speed regulation!

Set idle stop screw (dimension "c").

Screw back stop screw of injected-quantity lever.

Limit travel of stop pin (dimension "b") using for example feeler gauge EFEP 429-1 687 970 019 and place injected-quantity lever in position with fitted cylindrical helical coiled spring.

Set idle delivery at speed-regulating throttle.

Then place speed-control lever in position such that it makes contact with idle stop.

(In doing so, do not turn speed-regulating throttle, but rather, if necessary, adjust speed-control lever after loosening clamping screw at bracket).

(a)

Set low-idle speed regulation.

Position stop screw of injected-quantity lever at lugs of speed-control lever. Remove fixing element for dimension "b".

(b)

Test starting fuel delivery.

(c)

Set speed regulation at maximum-speed stop screw.

(d)

Set full-load delivery. Correct by adjusting injected-quantity stop. If full-load delivery has been altered, check (a), (b) and (d) again.

(e)

Tests as per Section B.

(f)

Test deliveries as per Section C.

(g)

Perform check measurement.

(h)

To do so, limit dimension "b" again (see above) and place injected-quantity lever in position with fitted cylindrical helical coiled spring. If necessary, correct quantity within tolerance of dimension "b".

Then position speed-control lever at idle stop screw and, if necessary, adjust stop screw of injected-quantity lever.

Remove fixing element for dimension "b".

Perform stop check.

(1)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4

1. Edition

En

PES 6 A 100 D 410 RS3025Z EP/RSV 400-1100 A2B765DL
RS 3025 EP/RSV 400-1100 A2B766DL
RS 3025 EP/RSV 400-1100 A7B767 L

supersedes

company

engine

John Deere
6404 A

Test-pressure line 6 x 2 x 600 Inlet pressure 1.5 bar

Manifold-pressure compensator (LDA) adjustment page 3!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0+0,1(-0,05)$ mm (from BDC)

Port closing mark 14 °
after port closing.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,6 - 8,3	0,5			
	6	3,2 - 4,2				
	12	12,2 - 13,5				
200	9	4,0 - 5,2				

Adjust the fuel delivery from each outlet according to the values in

400-1100 A2B765DL mit 3025Z

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 43	1060	16,0	without auxiliary spring			ca. 21	400	6,3	1100	0
	1145	9,5					200	19 - 21		
	1200	4,5					400	6,0-6,6	500	0,4-0,7
	1100	ca. 10,5					450	3,7-4,8		
	1200	ca. 4,5					560	0 - 1		
2a	1250	0,3-1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	5	rev/min 6	cm ³ /1000 strokes 7	8	rev/min 9	Control rod travel mm 10
LDA 1100	0,8 bar 107,5-109,5	1140-1150* (1135-1155)	LDA 750	0,8 bar 118,5-121,5	100	156,0-176,0	400	6,3	
			LDA 550	0 bar 53,0-59,0	400 1200	11,5-15,5 20,5-26,5			

(increase by : 2,0 cm³!)

Checking values in brackets

* 1 mm less control rod travel than col 2

9.76

Testoil-ISO 4113

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F10

F10

The numbers denote the sequence of the tests

400-1100 A2B766DL

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control-lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
ca. 43	1060	16,0	without auxiliary spring			ca. 21	400		1100	0
	1145	9,3					200	19 - 21	500	1,7-1,9
	1200	4,3					400	6,0-6,6		
	1100	ca. 10,4	with auxiliary spring				500	0,4-3,2		
	1200	ca. 4,3					580	0 - 1		
	1270	0,3-1,0								

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
LDA 1100	0,8 bar 107,0-109,0	1140-1150* (1135-1155)	LDA 500	0,8 bar 122,5-125,5	100	156,0-176,0	400	6,3	
					400	11,5-15,5			
					1200	18,5-28,5			

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control-lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm
ca. 72	1070	16,0	without auxiliary spring			ca. 30	400	6,3		
	1100	11,6					150	19 - 21		
	1150	4,2					400	6,0-6,6		
	1080	ca. 10,6	with auxiliary spring				450	1,7-3,7		
	1120	7,0- 9,6					500	0 - 1		
	1180	0,3- 1,0								

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1080	112,0-114,0	1110-1120* (1105-1125)			100	156,0-176,0	400	6,3	
					400	11,5-15,5			
					1150	11,5-21,5			

Checking values in brackets

* 1 mm less control rod travel than col. 2

En

Test Specifications

Fuel Injection Pumps (1A) and Governors

40

WPP 001/4
1. Edition

En

PES6A100D 420LS3024 RSV375-1100A2B763DR

supersedes -
company Case
engine A504 BDTI

1 - 5 - 3 - 6 - 2 - 4
0 -60 -120-180-240-300 $\pm 0,50$ (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,00-2,10$
(1,95-2,15) mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	9,2 - 9,8	0,6			
	6	3,8 - 4,8				
	12	13,9 - 14,9				
200	6	0,5 - 1,5				
	9	5,4 - 6,8				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control-lever deflection in degrees 7			3 Torque control Control rod travel rev/min mm 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	mm 11
ca. 43	1100 10,8 1160 7,3 1220 1,2		without auxiliary spring			ca. 22	375 6,0		1100	0
2a	1140 ca. 10,8 1200 4,7- 6,0 1280 0,3- 1,0		with auxiliary spring			150 375 450 560	19-21 5,7-6,3 2,7-4,1 0-1		500	0,1-0,4

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel mm rev/min 8	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7			
1100	158,0 - 160,0 (157,0 - 161,0)	1140-1150*	700 600 1225	161,0-165,0 (158,5-167,5) max. 164,0 13,5- 19,5		100	133-139	375	17,5- 21,5

Checking values in brackets

* 1 mm less control rod travel than col 2
1.80

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F13

13

①

Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 KHD 1 n 7

1. Edition

En

PE 8 A 95 D 410 LS 2451 RQV 1150 AB 1041 L

supersedes -

company: KHD

engine: F 8 L 413 F

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0 - 2,1$
(1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,0+0,1	8,7 - 8,9	0,3(0,6)			
300	5,9-6,1	0,9 - 1,4	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
-	9,0	1150-1155	-	-	-	-	-	-		
	4,5	1185-1195								
	1250	0 - 1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)	Torque-control travel (5)		
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	85,5-87,5 (83,5-89,5)	-	-	-	100	119,0-129,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

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9.81

F14

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 IHC 7,6b

2. Edition

En

PES 6 MW 100/320 RS 1504
RSV 350 ... 1200 MW 2/306 R

supersedes
company IHC
engine DT 466

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

3,20-3,30

Port closing at prestroke (3,15-3,35)

mm (from BDC)

10,5 mm RW

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	7,4 ^{+0,2}	6,5-6,7	0,3(0,5)			
350	5,7-5,9	1,8-2,2	0,3(0,5)			
1000			0,3(0,5)			
800			0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800 = 0,3-1,0					ca.32	350	5,8	1100	7,5-7,7
							100	min.19	1000	8,1-8,3
ca.60	1250-1260=6,5 1310-1340=3,1 1450= 0,3 - 1,7						350	5,7-5,9	800	8,6-8,8
②a							430-490	= 2,0	500	8,7-8,9

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	rev/min 5	cm ³ /1000 strokes	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1200	65,0-67,0 (64,0-68,0)	1250-1260*	1000	72,0-74,0 (71,0-75,0)		100	min. 140	350	5,8
			800	78,0-80,0 (77,0-81,0)		350	18,0-22,0 (17,0-23,0)		
						325	24,0-36,0 (23,0-37,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

3.80

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F15

FAS

Test Specifications Fuel Injection Pumps and Governors

40

1A WPP 001/4 IHC 7,6a
2. Edition

En

PES 6 MW 100/320 RS 1504
RSV 350 ... 1250 MW 2/305 R

supersedes
company IHC
engine DT 466

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,20-3,30$ mm (from BDC) $10,5$ mm RW
($3,15-3,35$)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	$7,3^{+0,2}$		$0,3(0,5)$			
350	$5,5-5,7$	$1,8-2,2$	$0,3(0,5)$			
1000			$0,3(0,5)$			
800			$0,3(0,5)$			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control lever deflection in degrees rev/min 8			3 Torque control Control rod travel rev/min 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					Control rod travel mm 9				
1000	$0,3-1,0$					350	$5,6$	1100	$7,3-7,9$	
						100	$\text{min. } 19$	1000	$7,8-8,0$	
ca. 60	$1300-1310=6,4$ $1360-1390=3,1$ $1450=0,3 = 1,7$					350 $430-490$	$5,5-5,7$ $= 2,0$	800 500	$8,5-8,7$ $8,6-8,8$	

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel mm 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		rev/min 8	
1250	$69,0-71,0$ ($68,0-72,0$)	$1300-1310^*$	1000	$76,0-78,0$ ($75,0-79,0$) $82,5-84,5$ ($81,5-85,5$)		100 350 1375	$\text{min. } 140$ $18,0-22,0$ ($17,0-23,0$) $25,0-37,0$ ($24,0-38,0$)	350	5,6

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.80

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 8,3d

1. Edition

En

PE 6 MW 90/720 RS 6 RWV 300-1200 MW 8
0 403 346 002

supersedes

company DAF
engine DH 825
151 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,00-2,10$ mm (from BDC) $10,5$ Control rod travel
(1,95-2,15)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	9,4+0,2	7,2-7,4	0,35(0,6)			
300	5,7-6,1	0,8-1,2	0,35(0,55)			
800	9,6+9,8		0,5 (0,7)			

Set uniform delivery according to the values in

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
26	(1) min. 10,0	150-200	82	(7) 8,5	1240-1250		(12) 100	20,5-21,5
	(2) 5,7	280-320		(8) 4,3	1260-1320		(13) 1200	9,1- 9,5
	(3) with contact 320			(9) 0	1320-1380		(14) 1000	9,4- 9,8
	(4)			(10)				
	(5) 0	450-550		(11)			(6) Switching point 230-250	(200-260)

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19)		Full-load speed regulation (8a)	Variations in fuel delivery (17)		Starting fuel delivery idle (18)		Difference
Test oil temp 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
1000	72,9-74,9 (70,9-76,9)	1240-1250 (1235-1255)	800	72,3-76,3 (70,3-78,3)	100 300	min.220 8,8-12,8 (6,3-15,3)	(12a)
							(15)
							(16)

Checking values in brackets

less control rod travel than in Column 2

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Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 u

6. Edition

En

PES 6 A 90 D 410 RS 2569 RQV 300-1400 AB 1065 DL (1)
RQV 300-1400 AB 1077 DL (2)

supersedes 10.80

company: Daimler-Benz

engine: OM 352

96 kW (130 PS)

Set the stop screw to control-rod travel 3 - 3,5 mm.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,25-2,35}{(2,20-2,40)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,1+0,1	5,9-6,0	0,3(0,45)			
300	8,4-8,6	1,0-1,6	0,2(0,4)			
500	11,3+0,1	C, Sp.4-5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1500	15,2-17,8	-	-	-	ca.21	100	min.10,0	300	1,1
	1630	0 - 1,0					300	8,4-8,6	670	3,9-4,1
							550-610 = 2,0		1450	8,0
ca.65	9,1	1440-1450								
	4,0	1530-1560								

Torque control travel a = 1,2 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm +0,1 9
1400	59,5-60,5 (57,5-62,5)	1440-1450*	500	51,5-54,5 (49,5-56,5)	100	72,25-82,25 14,4 - 15,0 mm RW	1400 1000 630 500	10,1 10,6 11,1 11,3
					100-	220 (80-240)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.81

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B. Governor Settings

AB 1077 DL

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca .68	1400 1700	15,2-17,8 0 - 1	-	-	-	ca .12	100 300 540-600 700	min.7,1 5,5-5,7 =2,0 0 - 1	300 800 1400	1,1-1,4 4,3-4,6 8,1
ca .60	9,7 4,0	1440-1450 1550-1580								

Torque control travel a 0,35 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1440	61,5-62,5 (59,5-64,5)	1440-1450*	1000	59,5-61,5 (57,5-63,5)	100	12,2-12,8	400 920 755 500	10,6 10,8 10,9 10,9
		705-720 (ZDA)**	500	53,0-56,0 (51,0-58,0)				

Checking values in brackets

** intermediate speed stop

* 1 mm less control rod travel than col 2

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11

Torque control travel a mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery Idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Fuel Injection Pumps ③ and Governors

VDT-WPP 001/4 MB 2,2 f

3. Edition

PES 4 M 55 C 320 RS 60 EP/MN 60 M 44 DR
EP/MN 60 M 50 DR

supersedes 10.75
company: Daimler-Benz
engine: OM 615

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 mm (from BDC) max. RW
(1,65-1,85)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 5	Fuel delivery cm ³ /100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
2250	13,2	3,5 - 3,7	0,2(0,25)			
250	(+0,1)					
1600	9,1	0,4 - 1,0	0,15(0,2)			
1000	(±0,1)					
	Sect. C, col. 4-6		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Torque control travel mm 1	Leakage		Control-rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop mm water col 2	Time at least s 3	Vacuum mm w.c. 4	Control rod travel mm 5	Vacuum mm w.c. 6	Control rod travel mm 7	Vacuum mm w.c. 8	Control rod travel mm 9	Vacuum mm w.c. 10	Control rod travel mm 11
1,1±0,1	500-480	10	470	13,2	510	7,7-13,2	550	10,0-10,8	200	14,3-14,4
			490-	510*	550	2,2- 9,3	650	9,1-10,0	300	14,0-14,3
									400	13,4-13,7
									470	13,2-13,3

control rod travel test (cols. 4-11)
= rotational speed 500 rev/min
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp 40°C (104°F)			Fuel delivery characteristics			idle (stop)** idle (imbalance)		Control rod travel from full-load to idle mm cm ³ /1000 strokes 8
rev/min 1	Vacuum mm wat. col 2	cm ³ /1000 strokes 3	rev/min 4	Vacuum mm wat. col 5	cm ³ /1000 strokes 6	rev/min 7	Vacuum mm wat. col. 7	
2250	470	35,7-36,7 (34,7-37,7)	1600	325	36,5-37,9 (35,5-38,9)	500	525	2,2 - 3,2
			1000	135	34,2-35,7 (33,2-36,7)	250	760	4,5 - 10,5

Checking values in brackets

11.76

Test Specifications Fuel Injection Pumps ③ and Governors

VDT-WPP 001/4 MB 2.2 g

1. Edition

PES 4 M 55 C 320 RS 60 EP/MN 60 M 48 D

supersedes -

 company: Daimler-Benz
 engine: OM 615
 (Sweden)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke 1,70-1,80 mm (from BDC) max. RW
 (1,65-1,85)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	5	6	7
2250	12,9	3,4 - 3,6	0,2(0,25)			
250	(+0,1) 9,1 (±0,1)	0,4 - 1,0	0,15(0,2)			
1600 1000)	Sect.C, col.4-6		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Torque control travel mm	Leakage		Control-rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop mm water col.	Time at least s	Vacuum mm w.c	Control rod travel mm	Vacuum mm w.c	Control rod travel mm	Vacuum mm w.c	Control rod travel mm	Vacuum mm w.c	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
0,8±0,1	500-480	10	470	12,9	510 550	7,8-13,0 2,2- 9,0	550 700	9,7-10,7 8,6- 9,6	150 350 470	13,8-13,9 13,3-13,7 12,9-13,0
			490 - 510*							

control rod travel test (cols. 4-11)
= rotational speed 500 rev/min.
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp 40°C (104°F)			Fuel delivery characteristics			idle (stop)** idle (imbalance)		Control rod travel from full-load to idle
rev/min	Vacuum mm wat. col	cm ³ /1000 strokes	rev/min	Vacuum mm wat. col	cm ³ /1000 strokes	rev/min	Vacuum mm wat. col	mm cm ³ /1000 strokes
1	2	3	4	5	6	7	8	8
2250	470	34,7 - 35,7 (33,7 - 36,7)	1600	325	35,2 - 36,7 (34,2 - 37,7)	500	525	2,2-3,2
			1000	135	31,7 - 33,2 (30,7 - 34,2)	250	ca.760	4,5-10,5

Checking values in brackets

2.76

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ③ and Governors

VDT-WPP 001/4 MB 2,4 a

4. Edition

PES 4 M 55 C 320 RS 47 A EP/MN 60 M 38 DR (1)
 RS 47 ..M 39 DR, 42 DR, 43 DR (1)
 RS 47 ..M 40 DR (2)

supersedes 6.75
 company Daimler-Benz
 OM 616
 engine (65 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 - 1,8 mm (from BDC) max. RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 5	Fuel delivery cm ³ /100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
1000	12	2,1 - 2,6	0,3			
	9	1,1 - 1,7				
	18	4,1 - 4,9				
200	9	0,5 - 1,0				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

38DR, 39DR, 42DR, 43DR (1)

Torque control travel mm 1	Leakage		Control-rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop mm water col. 2	Time at least s 3	Vacuum mm w.c. 4	Control rod travel mm 5	Vacuum mm w.c. 6	Control rod travel mm 7	Vacuum mm w.c. 8	Control rod travel mm 9	Vacuum mm w.c. 10	Control rod travel mm 11
1,1+0,1	500-480	10	550	14,8	580	10,5-14,8	675	10,2-11,2	150	15,9-16,0
			550-580		615	7,8-11,8	850	8,8- 9,8	250	15,5-15,9
									350	15,0-15,4

control rod travel test (cols 4-11)
 = rotational speed 500 rev/min
 adjust breakaway (cols 4-5) by means of shims*
 cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp 40°C (104°F)			Fuel delivery characteristics			idle (stop)** idle (imbalance)		Control rod travel from full-load to idle
rev/min 1	Vacuum mm wat. col. 2	cm ³ /1000 strokes 3	rev/min 4	Vacuum mm wat. col. 5	cm ³ /1000 strokes 6	rev/min 7	Vacuum mm wat. col. 8	mm cm ³ /1000 strokes 9
(1) 2250	520	39,7 - 40,7 (39,2 - 41,2)	1600	360	38,7 - 40,7 (38,2 - 41,2)	250	ca. 840	4,5 - 10,5 dispersion max. 1,5
			1000	140	38,2 - 39,7 (37,7 - 40,2)			

Checking values in brackets

B. Governor Settings

40 DR

Leakage			Control-rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
Torque control travel mm 1	Vacuum pressure drop mm water col. 2	Time at least s 3	Vacuum mmw.c. 4	Control rod travel mm 5	Vacuum mm w.c. 6	Control rod travel mm 7	Vacuum mm w.c. 8	Control rod travel mm 9	Vacuum mm w.c. 10	Control rod travel mm 11
1,1+0,1	500-480	10	550	14,3	580	9,5-14,3	675	9,7-10,8	150	15,3-15,4
			550-580		615	6,7-11,3	850	8,3- 9,4	250	14,9-15,4
									350	14,4-14,8

control rod travel test (cols. 4-11)
= rotational speed 500 rev/min
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp. 40°C (104°F)			Fuel delivery characteristics			idle (stop)** idle (imbalance)		Control rod travel from full-load to idle
rev/min 1	Vacuum mm wat. col. 2	cm ³ /1000 strokes 3	rev/min 4	Vacuum mm wat. col. 5	cm ³ /1000 strokes 6	rev/min 7	Vacuum mm wat. col. 8	mm cm ³ /1000 strokes 9
(2) 2250	520	38,7-39,7 (38,2-40,2)	1600	360	37,9-39,5 (37,4-40,0)	250	ca. 840	4,5-10,5
			1000	140	37,2-38,7 (36,7-39,2)			dispersion max. 1,5

Checking values in brackets

B. Governor Settings

Leakage			Control-rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
Torque control travel mm 1	Vacuum pressure drop mm water col. 2	Time at least s 3	Vacuum mmw.c. 4	Control rod travel mm 5	Vacuum mm w.c. 6	Control rod travel mm 7	Vacuum mm w.c. 8	Control rod travel mm 9	Vacuum mm w.c. 10	Control rod travel mm 11

control rod travel test (cols. 4-11)
= rotational speed 500 rev/min
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp. 40°C (104°F)			Fuel delivery characteristics			idle (stop)** idle (imbalance)		Control rod travel from full-load to idle
rev/min 1	Vacuum mm wat. col. 2	cm ³ /1000 strokes 3	rev/min 4	Vacuum mm wat. col. 5	cm ³ /1000 strokes 6	rev/min 7	Vacuum mm wat. col. 8	mm cm ³ /1000 strokes 9

Checking values in brackets

**** Adjustment of idle stop:**

At $n = 500$ and with the governor stop cam out of engagement, bring the control rod into full-load position by increasing the column of water to 520 mm and measure the control-rod travel obtained. Increase column of water further until the control rod has adjusted to 4.5 mm less control-rod travel - than in full-load position and measured at 520 mm column of water. In this position, slowly force the stop cam up to the end position and observe control rod.

If the spring retainer is correctly adjusted, the control rod must adjust to a control-rod travel 3.7 ± 0.5 mm less - than in full-load position measured at 520 mm column of water. If the setting is lower or higher, then the position of the spring bolt in the spring retainer must be changed by inserting appropriate shims.

Test Specifications Fuel Injection Pumps ③ and Governors

En

VDT-WPP 001/4 MB 2,0b

3. Edition

PES 4 M 50 C 320 RS14 EP/MN 60 M 31 DR
RS14Z EP/MN 60 M 31 DR ./.

supersedes 3.76
company: Daimler-Benz
engine: OM 615

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{1,70-1,80}{(1,65-1,85)}$ mm (from BDC) max. RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 5	Fuel delivery cm ³ /100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
2250	13,3	3,4 - 3,5	0,2(0,25)	13,2	3,2 - 3,4	
250	(+0,1) 9,1 (+0,1)	0,4 - 1,0	0,15(0,2)	(+0,1) 9,1 (+0,1)	0,4 - 1,0	
1600/1000	Sect.C	col.4-6	0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

31 DR with S14

Torque control travel mm 1	Leakage		Control-rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop mm water col. 2	Time at least s 3	Vacuum mm w.c. 4	Control rod travel mm 5	Vacuum mm w.c. 6	Control rod travel mm 7	Vacuum mm w.c. 8	Control rod travel mm 9	Vacuum mm w.c. 10	Control rod travel mm 11
1,0+0,1	500-480	10	490	13,3	530 600	9,5-13,3 2,0- 7,5	600 700	10,0-11,0 9,2-10,2	150 300 400 490	14,2-14,3 13,9-14,2 13,3-13,7 13,3-13,4
control rod travel test (cols. 4-11) = rotational speed 500 rev/min. adjust breakaway (cols. 4-5) by means of shims* cam adjustment (B 8-9 - C 7-8) by means of shims**										

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp 40°C (104°F)			Fuel delivery characteristics			idle (stop)** idle (imbalance)		Control rod travel from full-load to idle
rev/min 1	Vacuum mm wat. col. 2	cm ³ /1000 strokes 3	rev/min 4	Vacuum mm wat. col. 5	cm ³ /1000 strokes 6	rev/min 7	Vacuum mm wat. col. 8	mm cm ³ /1000 strokes 9
2250	490	34,2 - 35,2 (33,3 - 36,2)	1600	350	31,9 - 33,4 (30,9 - 34,4)	500	530	2,0-3,0
			1000	125	31,9 - 33,4 (30,9 - 34,4)	250	ca.800	4,5-10,0
./.								

Checking values in brackets

B. Governor Settings

31D with S14Z

MB 2,0 b

-2-

③

Control rod setting										
Torque control travel mm 1	Leakage		Control rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop mm water col 2	Time at least s 3	Vacuum mm w.c. 4	Control rod travel mm 5	Vacuum mm w.c. 6	Control rod travel mm 7	Vacuum mm w.c. 8	Control rod travel mm + *** 9	Vacuum mm w.c. 10	Control rod travel mm 11
1,0+0,1	500-480	10	490	13,2	535 600	8,7-13,2 1,5- 7,7	600 700	9,8-10,8 9,0-10,0	150 300 400 490	14,1-14,2 13,8-14,2 13,3-13,7 13,2-13,3
515 - 535*										
control rod travel test (cols. 4-11) = rotational speed 500 rev/min adjust breakaway (cols 4-5) by means of shims* cam adjustment (B 8-9 - C 7-8) by means of shims**										

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp. 40°C (104°F)			Fuel delivery characteristics			idle (stop)** idle (imbalance)		Control rod travel from full-load to idle mm cm ³ /1000 strokes
rev/min	Vacuum mm wat. col.	cm ³ /1000 strokes	rev/min	Vacuum mm wat. col.	cm ³ /1000 strokes	rev/min	Vacuum mm wat. col.	8
1	2	3	4	5	6	7		
2250	490	32,7-33,7 (31,7-34,7)	1600	350	31,2-32,7 (30,2-33,7)	500	550	2,0-3,0
			1000	125	31,2-32,7 (30,2-33,7)	250	ca. 800	4,5-10,5

Checking values in brackets

B. Governor Settings

Leakage			Control rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
Torque control travel mm	Vacuum pressure drop mm water col	Time at least s	Vacuum mm w.c.	Control rod travel mm	Vacuum mm w.c.	Control rod travel mm	Vacuum mm w.c.	Control rod travel mm	Vacuum mm w.c.	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
control rod travel test (cols 4-11) = rotational speed 500 rev/min adjust breakaway (cols 4-5) by means of shims* cam adjustment (B 8-9 - C 7-8) by means of shims**										

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp. 40°C (104°F)			Fuel delivery characteristics			idle (stop)** idle (imbalance)		Control rod travel from full-load to idle mm cm ³ /1000 strokes
rev/min	Vacuum mm wat. col.	cm ³ /1000 strokes	rev/min	Vacuum mm wat. col.	cm ³ /1000 strokes	rev/min	Vacuum mm wat. col.	8
1	2	3	4	5	6	7		

Checking values in brackets

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 EIC 3,9c

3. Edition

En

PES 4 A 80 D 420 RS 1278 RSV 300-1000 A 1 B 643 DR

supersedes 4.80

company Eicher

engine EDK 4-10 Turbo
55 kW (75 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

(2,10-2,30)

Port closing at prestroke 2,15-2,25

mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 5
980	10,7 ^{+0,1}	6,7 - 6,8	0,2(0,35)			
300	7,4-7,6	1,1 - 1,5	0,2(0,3)			
500	-	C, col.4-5	0,3(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.29	300	5,5	980	10,7
	x =	5,5					100	min.19,0	450	10,7
ca.57	1020-1030 =	9,7					300	5,9 -6,1		
2a	1055-1085 =	4,0					500	max. 1,0		
	1230 =	0,3 - 1,7					370-430	- 2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
rev/min 1	cm ³ /1000 strokes 2	3		4	5	6	7	8	9
980	68,0 - 69,0 (66,4 - 70,5)	1020-1030*		500	60,0 - 62,0 (58,5 - 63,5)	100	16,5-17,1 mm RW	300	6,0

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.81

BOSCH

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G3

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 MB 2,2 h

1. Edition

En

PES 4 M 70 C 320 RS 50 EP/RSV 350-2200 MOB 329 DR

supersedes
company Daimler-Benz
engine OM 615/WK

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{1,50-1,60}{(1,45-1,65)}$ mm (from BDC) RW max.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0+0,1	3,1 - 3,4	0,3			
	9,0- 9,1	2,2 - 2,8				
	15,0-15,1	3,8 - 4,4				
	9,0- 9,1	0,4 - 1,0				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 66°	2200 2300 2400	16,0 11,5 5,6	without auxiliary spring			ca. 22	350 100	8,0 20,5-21,0	2200 1900 400	0 0 1,1-1,3
②a	2300 2400 2470	10,2-12,0 3,6-7,0 0 -1,0					350 550 770	7,7- 8,3 2,2- 5,2 0 - 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
2180	37,0-38,0		-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

BOSCH

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11.81

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G4

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 2,4n

1. Edition

En

PES 4 M 55 C 320 RS 49 RSV 400...2100 MOB349

supersedes -
company Daimler-Benz
engine OM 616

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

1,70-1,80
Port closing at prestroke (1,65-1,85) mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
2080	14,4-14,5	3,95 - 4,05	0,2(0,25)			
400	7,3- 7,5	7,9 - 13,9	0,2(0,25)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
Too loose	800	0,3-1,0				ca. 20	400	6,9	2080	14,4+0,1
	X	= 4,0					400	7,3-7,5	1550	15,0+0,2
ca. 62		2140-2150=13,4					820 -	880=2,0	450	15,4+0,1
②a		2260-2280) 4,0								
		2470 = 0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 8	Control rod travel mm 9
2080	39,7 - 40,7 (38,7 - 41,7)					100	RW (mm) 19,0-21,0		
						Low idle speed			
						400	7,5 -13,5 RW (mm) 7,3-7,5		

Checking values in brackets

* 1 mm less control rod travel than col 2

6.81

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G5

G5

Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 MB 2,2 e

4. Edition

En

PES 4 M 55 C 320 RS 49 EP/RSV 350-1600 M2 B 331 R

RS 49 EP/RSV 350-1650 M2 B 344 DR ./.

RS 49,Z EP/RSV 675-1250 M1 B 345 R ./.

supersedes 5.7

company Daimler-Benz

engine OM 615

OM 616 - 2,4 -49Z

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC) max. RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	2,7 - 2,9	0,3			
	9	1,6 - 2,0				
200	9	0,9 - 1,3				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

..331R

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca.72	1600	16,0	without auxiliary spring			ca.28	350	8,0	1580	0
	1700	9,8					150	19-21		
	1750	6,0					350	7,7-8,3	600	0
2a	1700	8,5-10,9	with auxiliary spring				500	2,7-4,9		
	1800	3,0- 5,3					740	0 - 1	400	1,2-1,8
	1960	0,3 - 1								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)				Idle			
rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1580	34,7 - 35,7	1620			100	min. 20 dispersion	350	7,5-11,5 .max.2)	
(increase by + 0,5 cm³!)									./.

Checking values in brackets

* 1 mm less control rod travel than col 2

10.77

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Testoil-ISO 4113

G6

66

The numbers denote the sequence of the tests

..344DR

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 69	1630	16,0	without auxiliary spring			ca. 24	350	8,0	1630	0
	1680	11,7					200	20,5-21,0		
	1720	8,0					350	7,7- 8,3	500	0,5-0,7
							500	2,9- 4,3		
②a	1630	ca. 13,8	with auxiliary spring				680	0 - 1		
	1730	ca. 7,0								
	1860	0,3 -1,0								

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ ④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1630	36,7-37,7	1665-1675*		1500	36,2 - 38,2	100	min. 20	350	7,5-11,5
				1250	35,7 - 37,7		dispersion		max.2)
				1725-	1740 =				
					7,0 mm RW				
(increase by + 0,5 cm³!)									

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 59	1240	16,0	without auxiliary spring			ca. 32	675	7,5	-	-
	1260	12,6					200	20,5-21,0		
	1280	8,6					675	7,2- 7,8		
							730	2,4- 5,0		
②a	1240	ca. 14,4	with auxiliary spring				820	0 - 1		
	1300	ca. 6,5								
	1400	0,3- 1,0								

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤ ④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1230	35,2-36,2	1250-1270*				100	min.20	675	7,5
"Z"									
1230	39,7-40,7	1270-1280*							
				1300-	1315 =				
					6,5 mm RW				
(increase by ± 0,5 cm³!)									

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors

40

VDT-WPP 001/4 MB 2,4c

2. Edition

En

PES 4 M 55 C 320 RS 49 EP/RSV 400-2100 M0 B 364 D (1)

RS 49 350-1650 M2 B 347 (2)

RS 49 Z 350-1650 M2 B 347 (3)

RS 49 400-2100 M0 B 348D (4)

superseded

company

engine

Daimler-Benz
OM 616

(1 - 65 PS)

(2 - 60 PS)

(3 - 55 PS)

(4 - L/O 309)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC) max. RW

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12	2,1 - 2,6	0,3			
	9	1,1 - 1,7				
	15	3,1 - 3,8				
200	9	0,5 - 1,0				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

400 - 2100 MOB 346 D (1)

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 59	2100	16,0	without auxiliary spring			ca. 18	400	7,4	2080	0
	2200	10,6					250	20,5-21,0	500	1,0-1,2
	2300	3,7					400	7,1- 7,7		
2a	2100	ca. 14,3	with auxiliary spring				480	1,8- 4,0		
	2250	ca. 7,3					580	0 - 1		
	2400	0,3 -1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min							
rev/min	cm ³ /1000 strokes			rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
2080	39,7 - 40,7	2150-2165*		1600	38,7 - 40,7	100	min. 20 mm RW	400	7,5-11,5
				1000	38,2 - 40,2				dispersion max. 1,5
	(increase by ± 0,5 cm ³ !)			2240-	2260 = 7,3 mm RW)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.75

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G8

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B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 62	1660	16,0	without auxiliary spring			ca. 18	350	8,5	-	-
	1700	12,4					200	20,5-21,0		
	1740	8,0					350	8,2- 8,8		
	1650	ca. 14,8	with auxiliary spring				500	2,9- 5,6		
	1740	ca. 7,8					680	0 - 1		
	1900	0,3 -1,0								

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
(2)									
1650	39,2 - 40,2	1665-1675*		1735	1750=	100	min. 20mm RW	350	7,5-11,5
(3-Z)					7,8 mm RW				dispersion max.
1650	37,7 - 38,7	1665-1675*		1735	1755			1,5	
(increase by ± 0,5 cm³!)					6,4 mm RW				

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 59	2100	16,0	without auxiliary spring			ca. 18	400	7,4	2080	0
	2200	10,6					250	20,5-21,0		
	2300	3,7					400	7,1- 7,7		
	2100	ca. 14,3	with auxiliary spring				480	1,8- 4,0	500	1,0-1,2
	2250	ca. 7,3					580	0 - 1		
	2400	0,3 -1,0								

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
(4)									
2080	39,7-40,7	2150-2165*		1600	38,7-40,7	100	min. 20mm RW	400	7,5-11,5
				1000	38,2-40,2				dispersion max.
				2240	-2260:				1,5)
(increase by ± 0,5 cm³!)					7,3 mm RW				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps ② and Governors

FIA 13,8 a 4

1. Edition

En

PE 6 P 120 A 720 RS 167 Z RQV 225/1100 PA 118 R

supersedes -

company: Fiat

engine: 221 A

210 kW (286 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,0 - 2,1
(1,95-2,15)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	10,3+0,1	17,5-17,9	0,5(0,9)			
225	7,5-7,7	1,7- 2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
550	15,6-16,4	550	16,0	9,3	1145-1160	225	7,6	100	min.7,5	1100	10,3-10,4
								225	7,5-7,7	550	10,3-10,5
1300	0- 1,0			4,0	1185-1215			365	-405=2,0		

Torque-control travel

flyweight assembly dimension a =

mm

Speed regulation: At 1145-1160 min.⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7
1100	175,0-179,0 (172,0-182,0)					100	min. 15mm RW

Checking values in brackets

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MWM 8,8 a

2. Edition

En

PE 6 A 100 D 320 RS 3008 EP/RSV 300-1150 A1B489DR
PE 8 A 100 .. RS 3009 EP/RSV 300-1150 A1B489DR
RQV 300/550-750AB660R, 871R

supersedes 12.68
company MWM
engine D/TD 232 - 6
D/TD 232 - 8

Instructions P. 3

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	9	7,6 - 8,2	0,4			
	6	3,2 - 4,2				
	12	12,3 - 13,4				
200	9	3,4 - 4,6				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

EP/RSV .. 489DR

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.66	1150	16,0	without auxiliary spring			ca.28	300	6,0	See note	
	1200	11,4								
	1250	5,8								
2a	1230	6,0-9,3					100	19 - 21		
	1280	1,8-4,0					300	5,7 - 6,3		
	1400	0,3-1					350	3,5 - 4,7		
							400	0,6 - 3,0		
							500	0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
See page 4-14									

Checking values in brackets

* 1 mm less control rod travel than col 2

7.77

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G11

RQV .. 660R 871R**

B. Governor Settings

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 66	750	14,8-17,8	ca. 34	520	13,7-15,5	ca. 10	250	6,8-8,0		
	770	9,0-14,0		600	8,5-10,0		300	4,5-7,0		
	790	3,5-10,5		650	4,5- 7,0		350	3,6-4,0		
				720	0		550	1,8-4,0		
	800	0 - 8					630	0		
⑤	840	0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
See page 4-14					100	15,7-16,3 mm RW		
					300	5,3-5,7 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
⑤										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit	③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

①A

** Governor ..871R = electromagnetic starting fuel delivery unlocking (24 volt)

Switch on magnet for max. 15 sec. when testing.

The nameplate described at MWM 1.5 a has recently been extended to 2 speeds and 2 deliveries - in column n = (speed) and Q = (full-load delivery) for more accurate setting in the case of governors with torque control.

The following points apply, deviating from WPP 001/4, Supplement 1, setting the governor and the pump:

(2) Setting according to nameplate n = (speed 1) and Q = (delivery 1); or according to columns 1 and 2

(3) Is contacted until change of control-rod travel, as read under (2), or (with new nameplate) until the 2 delivery is reached at speed 2; or according to columns 4 and 5

(6) Is adjusted according to nameplate n = (speed 1 + 20 rpm) or column 3

For repairs on Fendt tractors on which the new nameplate (with 2 speeds and 2 deliveries) has not yet been introduced, the full-load data apply - ordered according to engine types -

according to the above note

In the case of new replacement pumps from Stuttgart warehouse there is no spring retainer. Send for from MWM according to old nameplate.

Cam sequence and angular spacing:

PE 6 A:

1 - 6 - 3 - 2 - 5 - 4

0 -90 -120-210-240-330°

PE 8 A:

1 - 8 - 5 - 4 - 7 - 2 - 3 - 6

0 -30 -90 -120-180-210-270-300°

En

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 165 PS / 2500 min⁻¹								
1250	81,0-83,0	1270	750	82,5-85,5				
B'162 PS / 2500 min⁻¹								
1250	81,0-83,0	1270	750	82,5-85,5				
B 162 PS / 2500 min⁻¹								
1250	81,0-83,0	1270						
F 160 PS / 2300 min⁻¹								
1150	80,0-82,0	1170	750	82,5-85,5				
B'155 PS / 2300 min⁻¹								
1150	80,0-82,0	1170	750	82,5-85,5				
B 155 PS / 2300 min⁻¹								
1150	80,0-82,0	1170						
A 141 PS / 2300 min⁻¹								
1185	76,0-78,0	1200						
B'144 PS / 2100 min⁻¹								
1050	77,0-79,0	1060	750	82,5-85,5				
B 144 PS / 2100 min⁻¹								
1050	77,0-79,0	1060						
A 131 PS / 2100 min⁻¹								
1080	73,0-75,0	1090						
F 144 PS / 2000 min⁻¹								
1000	77,0-79,0	1010	750	82,5-85,5				
B'138 PS / 2000 min⁻¹								
1000	77,0-79,0	1010	750	82,5-85,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 138 PS / 2000 min⁻¹

1000 77,0-79,0 1010

A 126 PS / 2000 min⁻¹

1030 73,0-75,0 1040

B 127 PS / 1800 min⁻¹

900 78,0-80,0 910

A' 115 PS / 1800 min⁻¹

900 78,0-80,0 910

A 115 PS / 1800 min⁻¹

930 74,0-76,0 940

B 108 PS / 1500 min⁻¹

750 80,0-82,0 760

A' 98 PS / 1500 min⁻¹

750 80,0-82,0 760

A 98 PS / 1500 min⁻¹

775 76,0-78,0 785

B 162 PS / 2300 min⁻¹

1150 83,0-85,0 1170

Special output

D 143 PS / 1800 min⁻¹

900 89,0-91,0 910

Emergency power output

C 130 PS / 1800 min⁻¹

900 89,0-91,0 910

Emergency power output

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

D 120 PS / 1500 min⁻¹

750 90,0-92,0 760

Emergency power output

C 109 PS / 1500 min⁻¹

750 90,0-92,0 760

Emergency power output

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation rev/min	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 220 PS 2500 min⁻¹								
1250	81,0-83,0	1270	750	82,5-85,5				
B' 216 PS 2500 min⁻¹								
1250	81,0-83,0	1270	750	82,5-85,5				
B 216 PS 2500 min⁻¹								
1250	81,0-83,0	1270						
F 213 PS 2300 min⁻¹								
1150	80,0-82,0	1170	750	82,5-85,5				
B' 206 PS 2300 min⁻¹								
1150	80,0-82,0	1170	750	82,5-85,5				
B 206 PS 2300 min⁻¹								
1150	80,0-82,0	1170						
A 188 PS 2300 min⁻¹								
1185	76,0-78,0	1200						
B' 192 PS 2100 min⁻¹								
1050	77,0-79,0	1060	750	82,5-85,5				
B 192 PS 2100 min⁻¹								
1050	77,0-79,0	1060						
A 175 PS 2100 min⁻¹								
1080	73,0-75,0	1090						
F 192 PS 2000 min⁻¹								
1030	77,0-79,0	1040	750	82,5-85,5				
B' 184 PS 2000 min⁻¹								
1000	77,0-79,0	1010	750	82,5-85,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 184 PS / 2000 min⁻¹

1000 77,0-79,0 1010

A 168 PS / 2000 min⁻¹

1000 73,0-75,0 1010

B 169 PS / 1800 min⁻¹

930 78,0-80,0 940

A'154 PS / 1800 min⁻¹

900 78,0-80,0 910

A 154 PS / 1800 min⁻¹

900 74,0-76,0 910

B 144 PS / 1500 min⁻¹

775 80,0-82,0 785

A'130 PS / 1500 min⁻¹

750 80,0-82,0 760

A 130 PS / 1500 min⁻¹

750 76,0-78,0 760

B 216 PS / 2300 min⁻¹

1150 83,0-85,0 1170

Special output**D 190 PS / 1800 min⁻¹**

900 89,0-91,0 910

Emergency power output**C 173 PS / 1800 min⁻¹**

900 89,0-91,0 910

Emergency power output**Testoil-ISO 4113**

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

D 160 PS / 1500 min⁻¹

750 90,0-92,0 760
Emergency power output

C 145 PS / 1500 min⁻¹

750 90,0-92,0 760
Emergency power output

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

F 210 PS / 2300 min⁻¹

1150 105,0-107,0 1170 800 104,5-107,5

B' 207 PS / 2300 min⁻¹

1150 105,0-107,0 1170 800 104,5-107,5

B 207 PS / 2300 min⁻¹

1150 105,0-107,0 1170

A 188 PS / 2300 min⁻¹

1185 101,0-103,0 1200

B' 192 PS / 2100 min⁻¹

1050 103,0-105,0 1060 800 104,5-107,5

B 192 PS / 2100 min⁻¹

1050 103,0-105,0 1060

A 174 PS / 2100 min⁻¹

1080 99,0-101,0 1090

F 192 PS / 2000 min⁻¹

1000 102,0-104,0 1010 800 104,5-107,5

B' 184 PS / 2000 min⁻¹

1000 102,0-104,0 1010 800 104,5-107,5

B 184 PS / 2000 min⁻¹

1000 102,0-104,0 1010

A 167 PS / 2000 min⁻¹

1030 98,0-100,0 1040

B 168 PS / 1800 min⁻¹

900 101,0-103,0 910

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

A' 153 PS / 1800 min⁻¹

900 101,0-103,0 910

A 153 PS / 1800 min⁻¹

930 97,0-99,0 940

B 142 PS / 1500 min⁻¹

750 100,0-102,0 760

A' 129 PS / 1500 min⁻¹

750 100,0-102,0 760

A 129 PS / 1500 min⁻¹

775 96,0-98,0 785

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 292 PS / 2500 min⁻¹								
1250	102,0-104,0	1270	800	100,5-103,5				
B' 292 PS / 2500 min⁻¹								
1250	102,0-104,0	1270	800	100,5-103,5				
B 292 PS / 2500 min⁻¹								
1250	102,0-104,0	1270						
F 280 PS / 2300 min⁻¹								
1150	100,0-102,0	1170	800	100,5-103,5				
B' 275 PS / 2300 min⁻¹								
1150	100,0-102,0	1170	800	100,5-103,5				
B 275 PS / 2300 min⁻¹								
1150	100,0-102,0	1170						
A 250 PS / 2300 min⁻¹								
1185	96,0-98,0	1200						
B' 255 PS / 2100 min⁻¹								
1050	99,0-101,0	1060	800	100,5-103,5				
B 255 PS / 2100 min⁻¹								
1050	99,0-101,0	1060						
A 232 PS / 2100 min⁻¹								
1080	95,0-97,0	1060						
F 256 PS / 2000 min⁻¹								
1000	99,0-101,0	1010	800	100,5-103,5				
B' 245 PS / 2000 min⁻¹								
1000	99,0-101,0	1010	800	100,5-103,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

B 245 PS / 2000 min⁻¹

1000 99,0-101,0 1010

A 222 PS / 2000 min⁻¹

1030 95,0-97,0 1040

B 224 PS / 1800 min⁻¹

900 99,0-101,0 910

A' 203 PS / 1800 min⁻¹

900 99,0-101,0 910

A 203 PS / 1800 min⁻¹

930 95,0-97,0 940

B 189 PS / 1500 min⁻¹

750 98,0-100,0 760

A' 172 PS / 1500 min⁻¹

750 98,0-100,0 760

A 172 PS / 1500 min⁻¹

750 94,0-96,0 760

D 250 PS bei 1800 min⁻¹

900 111,0-113,0 910

C 227 PS / 1800 min⁻¹

900 111,0-113,0 910

Emergency power output**D 210 PS / 1500 min⁻¹**

750 111,0-113,0 760

Emergency power output**Testoil-ISO 4113**

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

C 191 PS / 1500 min⁻¹

750 111,0-113,0 760

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 12,8 1

3. Edition

En

PE 8 P 110 A 320 LS 844 RQ 300/1250 PA 473 R

8 - 7 - 2 - 6 - 3 - 5 - 4 - 1

0 -45 -90 -135-180-225-270-315 ± 0,50(± 0,75°)

supersedes 10.80

company: Daimler-Benz

engine: OM 402

(235,4 kW-320 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

3,40-3,50
(3,35-3,55)

mm (from BDC)

cyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,7+0,1	13,4 - 13,6	0,4(0,8)			
300	6,4-6,6	1,1 - 1,7	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 4		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
	Control rod travel mm 2				rev/min 6		Control rod travel mm 8		Control rod travel mm 9		Control rod travel mm 12
700	19,2-20,8	700	20,0	10,7	1295-1310	300	6,5	100	min. 8,0	1250	11,7-11,8
				4,0	1355-1385			300	6,4-6,6	700	11,7-11,9
1500	0- 1,0							410-	450 =2,0		

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test 0 at temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		Control rod travel mm 7
LDA	0,7 bar			LDA	0 bar	100	120,0-140,0 (Electromagnet 24 V)
1250	134,0-136,0 (131,0-139,0)			450	82,0-85,0 (79,0-88,0)	300	6,5
						100-	220 (80-240)

Checking values in brackets

.4.81

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Testoil-ISO 4113

H1

H1

D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n = 700

rev/min ~~XXXXXX~~ decreasing pressure - in bar gauge pressure
~~XXXXXX~~ increasing pressure

MB 12,8 1

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
844 with 473 R	0,7 bar	0,425 0,33 0	11,7 - 11,8 11,0 - 11,1 10,3 - 10,5 9,6 - 9,7

Notes.

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 8,7 c 2

1. Edition

En

PE 6 A 90 D 410 RS 2124 X

RQ 375/1275 AB 658-1 DL

supersedes -

company:

Daimler-Benz

OM 360

engine:

110 kW (150 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,15-2,25
(2,10-2,30)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,3-9,4	7,0 - 7,1	0,3(0,45)			
600	10,1+0,1	6,5 - 6,8	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	8,3 4,0	1290-1300 1345-1375	375	7,5	100 375 465- 550	min.9,0 7,4-7,6 505=2,0mm max.1,0	1250 700 895 1075	9,3-9,4 10,1-10,2 9,8-10,0 9,4-9,7

Torque-control travel
on flyweight assembly dimension a =

0,4 mm

Speed regulation: At 1290-1300 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1250	69,5-70,5 (67,5-72,5)	650		600	64,5-67,5 (62,0-69,0)	100	59,25-69,25 bei 10,2-10,6 mm RW

Checking values in brackets

2.82

Testoil-ISO 4113

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H3.

H3

Test Specifications Fuel Injection Pumps ② and Governors

En

PE 8 A 95 D 410 LS 2451 RQ 300/1075 AB 1046 DL

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3

0 -45 -90 -135-180-225-270-315° ± 0,5° (± 0,75°)

supersedes

8.80

company:

KHD

engine:

F 8 L 413 F

157 kW (213 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke (1,95-2,15)
2,00-2,10 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1075	9,2-9,3	8,4 - 8,6	0,3(0,6)			
300	5,9-6,1	0,9 - 1,4	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point		Test specifications				Test specifications				Control rod travel	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	8,2	1120-1135	300	6,0	100	min.7,5	1075	9,2-9,3
				4,0	1180-1210			300	5,9-6,1	950	9,2-9,5
								350	390=2,0	800	9,6-9,8
								450	max.1,0	600	9,8-9,9

 Torque-control travel on flyweight assembly dimension a = 0,3 mm Speed regulation: At 1120-1135min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /~1000 strokes 2	rev/min 3		rev/min 4	cm ³ /~1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1075	82,5-84,5 (80,5-87,5)	600		1000	83,0-86,0 (81,0-88,0)	100	119,0-129,0
				700	84,5-87,5 (82,5-89,5)		

Checking values in brackets

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 PEN 6,0e

1. Edition

En

PES 6 MW 100/320 RS 1004 RSV 325-1250 MW0/308
0 403 476 011

supersedes -
company Volvo/Penta
engine TD 60 D
118 kW (160 PS)

1 - 5 - 3 - 6 - 2 - 4
0 -60 -120-180-240-300 \pm 0,50(0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,80-2,90
Port closing at prestroke (2,75-2,95) mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,9+0,1	8,1 - 8,3	0,35(0,6)			
325	4,7-4,9	0,95-1,35	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.26	325	4,3	350	11,5+0,1
	x = 4,0						325	4,7-4,9	500	11,2-0,1
ca.63		1290-1300 = 9,9 1335-1365 = 4,0 1450 = 0,3 -1,7					450-510 = 2,0		1350	10,9+0,1
②a										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F)		⑥ Rotational-speed limitat Note changed to) rev/min		③a Fuel delivery characteristics		Starting fuel delivery Idle		④a Idle stop	
rev/min 1	cm ³ /1000 strokes 2	3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
1000	81,0-83,0 (79,0-85,0)	1290-1300*				100	min.140	325	4,8
						325	9,5 -13,5 (7,0 -16,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 PEN 6,0 f

1. Edition

En

PES 6 MW 100/320 RS 1004 RSV 325-1050 MW4/308
0 403 476 012

1 - 5 - 3 - 6 - 2 - 4
0-60-120-180-240-300 ± 0,50 (0,75)

supersedes -
company Volvo/Penta
engine TD 60 D
112 kW (152 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90
(2,75-2,95) mm (from BDC)

RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,0+0,1	8,2-8,3	0,35(0,6)			
325	4,7-4,9	0,95-1,35	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.26	325	4,3	350	11,5+0,1
	x =	4,0					325	4,7-4,9	500	11,2-0,1
ca.63	1090 - 1100=10,0						450 - 510 = 2,0		1050	11,0+0,1
2a	1135 - 1165= 4,0									
	1300 = 0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	82,0-84,0 (80,0-86,0)	1090-1100*				100 325	min.140,0 9,5-13,5 (7,0-16,0)	325	4,8

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.82

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Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 KHD 4,7 a
1. Edition

En

PES 5A 80 D 410/3 RS 2526 RSV 325-1200 A8B2147 L

1-3-5-4-2 je $72^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

supersedes -
company KHD
engine F5L912
65 kW (88 PS)
Schlepper

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,9.2,0$
(1,85-2,05) mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,5+0,1	6,0-6,1	0,2(0,35)			
325	8,9-9,1	0,9-1,5	0,2(0,3)			
800	12,1+0,1	C, Sp 4 u 5	0,3(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 19	325	8,5	1200	11,5+0,1
	X	= 4,5					325	8,9-9,1	500	12,1+0,1
ca. 56	1240-1250	= 10,5					465-525	= 2,0	950	11,8+0,2
2a	1285-1315	= 4,0								
	1450	= 0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1200	60,0-61,0 (58,5-62,5)	1240-1250*	800	58,0-60,0 (56,5-61,5)	100	19,0-21,0 mm RW			

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH

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1.82

Test Specifications Fuel Injection Pumps ① and Governors

Testoil-ISO 4113

PES 6 A 95 D 410 LS2485 RQV 250-1100 AB850D (1)
 LS2485Z RQV 250-1100 AB850D (2)
 LS2485 RQV 750 AB955 (3)
 Komb.-Nr. 0 400 846 371 (1) MAN-Nr. 1-7727
 0 400 846 403 (2) MAN-Nr. 1-7842
 0 400 846 376 (3) MAN-Nr. 1-7738

supersedes 3.84

company: M A N

engine: D 2566 M..

(1) M/MF-177 kW/2200 min⁻¹(2) MSFV-162 kW/2200 min⁻¹(3) ME-126 kW/1500 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60
 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery 2485 cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery 2485Z cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	12,3 - 12,5	0,3(0,6)	11,0+0,1	11,2 - 11,4	
250	5,9-6,1	1,1 - 1,7	0,3(0,5)	5,6-5,8	0,9 - 1,5	

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

2485 mit 850D (1)

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 50	1140 1200 1220 1300	14,4-17,6 4,0-10,6 0 - 8 0 - 1	-	-	-	ca. 13	100 200 300 410	7,5-10,2 5,7-8,5 2,5-5,3 0	200 600 1140 1140 550	0,5-2,2 3,8-4,1 8,3 0 0,4-0,6

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100 (1)	123,0-125,0 (121,0-127,0)	1140-1150 *	500	113,5-118,5 (111,5-120,5)	100	108,5-116,5 = 12,6-13,0 mm RW	-	-
					250	6,0 mm RW		./.
					130-190(120-200)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

2485 Z + RQV..850 D

MAN 11,1 h

-2-

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1140	14,4-17,6	-	-	-	ca.13	100	min. 7,4	200	0,7-0,9
ca.42	10,0 4,0 1300	1140-1150 1175-1205 0-1,0					250 310-370 450	5,6-5,8 =2,0 max.1,0	500 800 100	3,5-3,8 4,9-5,4 7,7

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1100 (2)	111,5-113,5 (109,5-115,5)	1140-1150*	800 500	114,5-118,5 (112,5-120,5) 111,5-113,5 (109,5-115,5)	100	13,7-14,3 mm RW	1100 800 500	11,0+0,1 11,4+0,2 11,5+0,1

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

2485 + RQV..955

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 29	725 750 770 800	16,0-22,0 9,3-13,8 2,5-11,0 0		-	-	-	-	-	750	4,6

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
725 (3)	122,5-124,5 (120,5-126,5)	765-770*	-	-	-	7,0-11,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

En

H9

①

Test Specifications Fuel Injection Pumps ① and Governors

 WPP 001/4
1. Edition

40

En

PE 8 AM 90 D 321 RS2014 RQV 275-1500 AB837R

supersedes

company:

Hispano
HS 115

engine:

 1 - 8- 7 - 3 - 6 - 5 - 4 - 2
 0 -45-90 -135-180-225-270-315[^]

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $2,15 + 0,1$ mm (from BDC) cyl. 7

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	6,6-7,0	0,4			
	6	2,8-3,6				
200	6	0,1-0,8				

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 68	1510 1570 1630 1690 1800	15,0-18,0 11,2-14,9 6,2-11,5 0 - 7,7 0	-	-	-	ca. 13	200 350 600 800 900	6,4-8,4 3,5-5,5 1,6-2,7 0,1-1 0	220 400 600 1510 -	0-0,9 1,6-2,4 2,6-3,2 8,3 -

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) rev/min 1		Rotational-speed limitation intermediate speed rev/min 3		Fuel delivery characteristics high idle speed rev/min 4		Starting fuel delivery idle switching point rev/min 6		Torque-control travel rev/min 8		Control rod travel mm 9
	cm ³ /1000 strokes 2		cm ³ /1000 strokes 5		cm ³ /1000 strokes 5b		cm ³ /1000 strokes 7			
1200	86,5-88,5	1590-1600*				100	159,25-169,25			

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.77

H10

H10

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 FOR 4,2 c 1

1. Edition

En

PES 4 A 85 C 410/3 RS 2309(1) EP/RSV 575-1100 A7 B572 DL

supersedes -

PES 6 A 85 C 410/3 RS 2314(2)

575-1100
(500-1100)

company Ford
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5+0,1-RW9-

mm (from BDC)

Difference between
RW 0 - 21 = 4 - 5.

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,9-5,5	0,4			
	6	1,3-2,1				
	15	12,3-13,1				
200	9	3,9-4,4				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 59	1115 1125 1135	12,0 6,0 2,2	without auxiliary spring			ca. 23	550	4,7	1100	0
							100 550 630	19-21 4,4-5,0 0 - 1		
ca. 58	1115 1140 1200	8,5-9,5 3,5 0,3-1,0	with auxiliary spring						650	0,1-0,3
2a										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
(1) 1080	69,0-71,0	1110-1120	500	max. 62,5					
(2) ca. 10 mm RW -	Carry out adjustment on engine (increase by 1,0 cm ³ !)								

Checking values in brackets

* 1 mm less control rod travel than col 2

1.77

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H11

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

1. Edition

En

PES 6 AM 90 D 410 RS 2015

EP/RSV 200-1100 A1 B1055 DL

supersedes

company

engine

MAN

D 2156 HMV

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,9-6,3	0,4			
	6	2,5-3,4				
200	9	3,2-4,1				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control-lever deflection in degrees rev/min 7 8 9			3 Torque control rev/min mm 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3									
ca. 65	1100 16,0 1150 12,6 1200 8,0		without auxiliary spring			ca. 27	200 7,5		1080 0	
	1180 8,2-11,0 1250 3,5-6,1 1400 0,3-1,0		with auxiliary spring				100 19-21 200 7,2-7,8 400 2,7-5,2 650 0 - 1		850 0,2-0,6 350 0,3-0,7	

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40° C (104° F) rev/min 1		6 Rotational speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop rev/min mm 8 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7			
1100	100,0-102,0	1120-1135	800 500	96,5-99,5 max. 95,0		100	15,7-16,3 mm RW		
Set lower delivery at inner lever!									
1100	81,0-83,0								

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

H12

H12

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12.75

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 q 3

5. Edition

En

PES 6 A 90D 410RS 2293
RS 2293Z

RSV 350-1300A0B1105DL(1)
350-1300A0B1101DL(2)

supersedes
company
engine

8.81
Daimler Benz
OM 352
93 kW(125PS)(1)
70 kW(94PS)(2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

(2,10-2,30)

Port closing at prestroke 2,15-2,25) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery ..2293 cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery ..2293Z cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	9,5-9,6	6,2-6,3	0,3(0,45)	8,2-8,3	4,0-4,1	
350	6,3-6,5	0,4-0,9	0,2(0,4)	6,9-7,1	0,7-1,1	
800	10,2+0,2	C, Col 4-5	0,4(0,55)			
500	10,3+0,1					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

..2293 with 1105DL (1)

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	ca. 28	350	5,9	1300	9,5-9,6
	X = 5,5						100	min 19,0	800	10,2-10,4
ca. 54	8,5	1340-1350					350	6,3-6,5	500	10,3-10,4
2a	4,0	1380-1410					700	max. 1,0		
	1550	0,3-1,7				490-550 =	2,0			

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1300	62,5-63,5 (60,5-65,5)	1340-1350*	800	60,0-62,0 (58,0-64,0)	100	79,25-89,25 13,7 - 14,3 mm RW	350	6,4	
			500	54,0-56,0 (52,0-58,0)					

Checking values in brackets

* 1 mm less control rod travel than col 2

2.82

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H14

H44

The numbers denote the sequence of the tests

..2293 Z with RSV-1101 DL (2)

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800 ^a	0,3-1,0	-	-	-	ca. 20	350	6,5	1300	8,2-8,3
	x = 3,0						100	min. 19,0	800	9,0-9,2
ca. 66	7,2	1340-1350					350	6,9-7,1	500	9,4-9,5
	4,0	1370-1400					680	max. 1,0		
②a	1500	0,3-1,7					520 -	580 = 2,0		

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery		⑤ Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)		rev/min		Idle		rev/min	
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1300	40,5-41,5 (38,5-43,5)	1340-1350*		800	42,0-45,0 (40,0-47,0)	100	13,7-14,3 min RW	350	7,0
				500	36,5-38,5 (34,5-40,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

En

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 1 o

4. Edition

En

Testoil-ISO 4113

PES 6 A 95 D 410 RS 2625

RSV 325-1150 A8B 674 DL

supersedes 3.84

Komb.-Nr. 0 400 876 305

A8C 674 L

company KHD

engine B F 6 L 913 B

Excavator

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $1,9 - 2,0$
 $(1,85 - 2,05)$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,4+0,1	8,0 - 8,2	0,3(0,6)			
325	7,2-7,4	1,6 - 2,2	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 15	325	6,8	1150	11,4+0,1
	X =	3,0							500	12,1+0,1
							325	7,2-7,4	1000	11,8+0,2
⑤ ca. 50	10,4	1190-1200					585-645	= 2,0		
	4,0	1265-1295								
	1325	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA 1150	0,7 bar 80,0 - 82,0 (78,0 - 84,0)	1190-1200*	LDA 800	0,7 bar 83,0-86,0 (80,5-88,5)	100	116,5-126,5 (113,5-129,5) = 15,9 - 16,4 mm RW			
			LDA 500	0 bar 56,5 - 59,5 (54,5 - 61,5)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

D. Adjustment Test for Manifold Pressure Compensator

KHD 1 o

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A..RS 2625 with .. A8B 674 DL .. A8C 674 L	0,7	0 0,36 0,2	12,2 - 12,3 11,1 - 11,2 11,9 - 12,0 11,1 - 11,3

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 6,1e1

5. Edition

En

Testoil-ISO 4113

PES 6 A 95 D 410 RS 2471 RSV 325-1150A 8 B 674 DL
Komb.-Nr. 0 400 876 275 A 8 C 674 DL

supersedes 6.83

company: KHD

engine: BF 6 L 913 C
132 kW/2300 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,85-2,05)
1,90-2,00 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,8+0,1	10,8 - 11,0	0,3(0,6)			
325	7,2-7,4	1,6 - 2,2	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca. 15	325	6,8	500	11,8+0,1
	x =	4,75					100	min. 19		
ca. 55 ⑤	1190-1200=10,3 1235-1265= 4,0 1400=0,3-1,7						325 615-675=2,0	7,2-7,4		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 108,0-110,0 (106,0-112,0)	1190-1200*		LDA 850	0,7 bar 102,5-105,5 (100,5-107,5) LDA 0 bar 62,0-64,0 (59,5-66,5)	100	120,0-130,0 (117,0-133,0) = 15,9 - 16,4 mm RW	325	6,8

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

KHD 6,1 e 1 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
2471 with 674 DL	0,7 bar		11,8 - 11,9
		0	10,6 - 10,7
		0,27	11,6 - 11,7
		0,1	10,8 - 11,0

Notes

(1) when n = rev/min and gauge pressure bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 MWM 6,2 d
6. Edition

En

PES 6 A D 320/3 RS 2483 RSV 325-1200 A2 B 777DR
Change of governor to
RSV 400-1200 A2B 777 R

supersedes 3.80
company MWM
engine TD 228-6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) RW 9 mm (from BDC)

Difference between
CRT9 + 21 3.5-4.5°

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1180	10,5-10,6	7,3-7,4	0,3(0,45)			
325	7,4-7,6	0,6-1,2	0,2(0,4)			
750/500	- - - -	C, Co 1.4-5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 45	1180 = 10,5-10,6 1220 = 1230=9,5 1255-1285=4,0		without auxiliary spring			ca. 19	325	6,5	1180	10,5-10,6
	1225 9,5-9,6 1300 3,2-4,4 1400 0,3-1,7						100 min. 19 325 6,4-6,6 550-560 = 2,0 700 0 - 1		750 500	11,3-11,4 11,6-11,7
②a			with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
LDA 1180	0,7 bar 73,0-74,0 (71,0-76,0)		LDA 500	0,7 bar 72,0 - 74,0 (70,0 - 76,0)					
LDA 750	0,7 bar 79,0-82,0 (77,0-84,0)		LDA 500	0 bar 56,5 - 59,5 (54,5 - 61,5)	325	6,25 - 12,25		325	6,5

Checking values in brackets

* 1 mm less control rod travel than col 2

5.80

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D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

MWM 6,2d

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
2483 with 777 DR	0,68	0,09 0,05 0	11,6 - 11,7 10,6 - 10,7 9,4 - 9,6 9,0 - 9,1

Notes.

(1) when n :

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 3,8k1

3. Edition

En

PES 4 A 90 D 410 RS 2294

EP/RSV 750-1400 AO B2022 DL

supersedes 11.80
company Daimler-Benz
engine OM 314
(85 PS)

1 - 3 - 4 - 2
0-90-180-270

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC) RW = 10,5 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1345	10,5	7,1 - 7,3	0,3(0,45)			
	+ 0,1					
750	5,9 - 6,1	1,6 - 2,2	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 X = 3,7				ca. 30	750	6,0	450	± 0,1 10,6
ca. 51		1385-1390 = 9,5 1435-1440 = 3,6 1500 = 0,3-1,7					100 750 765-795 820	min. 19 5,9-6,1 = 2,0 0-1	600	12,3

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	10
1345	71,5 - 72,5 (69,5 - 74,5)	1385-1390*				100	84,25 - 91,25	750	6,0

Checking values in brackets

* 1 mm less control rod travel than col 2

2.81

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7w3

2. Edition

En

PES 6 A 90 D 410 RS 2569 RSV 350 - 1275 A0 B 1138 L

supersedes 11.80
company Daimler-Benz
engine OM 352
62 kW (84 PS)

1 - 5 - 3 - 6 - 2 - 4
0 - 60 - 120 - 180 - 240 - 300

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

(2,20-2,40)

Port closing at prestroke

2,25-2,35

mm (from BDC)

RW = 10,5 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1250	8,4-8,5	4,0 - 4,1	0,3(0,25)			
350	8,4-8,6	0,8 - 1,4	0,2(0,4)			
750	-	C, Col. 4-5	0,4(0,3)			
600			0,4(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca.35	350	8,0	1250	8,4-8,5
	x = 6,0						350	8,4-8,6	785	9,1-9,3
							715-785	=2,0	500	9,8-9,9
ca.72	1290-1300 = 7,4									
2a	1330-1360 = 4,0									
	1545 = 0,3- 1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min				Idle		Control rod travel mm	
rev/min	cm ³ /1000 strokes	3		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	9
1250	40,5-41,5 (39,5-42,5)	1290-1300*		750	39,5-41,5 (38,5-42,5)	100	79,25-89,25	350	8,5
				600	37,0-39,0 (36,0-40,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

2.81

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Test Specifications Fuel Injection Pumps **(1A)** and Governors

40

WPP u01/4 MB 5,7w4

1. Edition

En

PES 6 A 90 D 410 RS 2569 RSV 350-1300 AOB 1137 L

supersedes
Daimler-Benz
company OM 352 ECE
engine 70 kW (95 PS)

1 - 5 - 3 - 6 - 2 - 4
0 - 60 - 120 - 180 - 240 - 300

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke **(2,20-2,40)**
2,25-2,35 mm (from BDC) RW = 10,5 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	9,1	4,2 - 4,3	0,3(0,45)			
	+0,1					
350 500	8,4-8,6 -	0,8 - 1,4 C, Col. 4-5	0,2(0,4) 0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 6,0				ca. 14	350	7,9	1300	9,1-9,2
							350	9,1-9,3	800	9,8-10,1
ca. 53		1340-1350=8,1 1360-1390=4,0 1550=0,3-1,7					650-710	= 2,0	500	10,2-10,3

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop		(6) Rotational speed limit	(3a) Fuel delivery characteristics		Starting fuel delivery (5)		(4a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min			Idle			
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1300	42,0-43,0 (40,0-45,0)	1340-1350*	500	34,5-37,5 (32,5-39,5)	100	79,25-89,25 16,2-16,6 mm RW	350	8,5
					350	8,25-14,25		

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.81

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 MB 5,7w6

1. Edition

En

PES 6 A 90 D 410 RS 2569 RSV 350-1400 AOB 1134 L

supersedes

company Daimler-Benz

engine JM 352

95 kW (130 PS)

1 - 5 - 3 - 6 - 2 - 4
0 - 60-120-180-240-300

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

(2,20-2,40)

Port closing at prestroke 2,25-2,35

mm (from BDC)

RW = 10,5 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1400	10,7	6,0 - 6,1	0,3(0,45)			
	+0,1					
350	8,3-8,5	0,7 - 1,3	0,2(0,4)			
500	- -	C, Col. 4-5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca. 27	350	7,5	1400	10,7
	x = 5,0						350	9,3-9,5	900	11,3
ca. 68	1440-1450=9,7						635-696 = 2,0		300	12,0
2a	1485-1515=4,0									
	1625=0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	4 5	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2					6	7	8	9
1400	60,0-61,0 (58,0-63,0)	1440-1450*	500	52,5 - 55,5 (50,5 - 57,5)		100	79,25-89,25 16,2-16,6 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

2.81

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7w8

1. Edition

En

PES 6 A 90 D 410 RS 2569 RSV 350-1300 A0B 1140 L

supersedes

company

engine

Daimler-Benz

OM 352

81 kW (110 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

(2,20-2,40)

Port closing at prestroke

2,25-2,35

mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1300	10,1	5,3-5,4	0,3(0,45)			
	+0,1					
350	8,6-8,8	0,9-1,5	0,2(0,4)			
500	- -	C, Col. 4-5				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca.20	350	2,0*	1300	10,1-10,2
							350	8,6-8,8	1050	10,6-10,9
ca.61		1340-1350=9,1					630-690	= 2,0	500	11,3-11,4
2a		1450-1480=4,0								
		1550=0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1300	53,0-54,0 (51,0-56,0)	1340-1350*		500	45,0-47,0 (43,0-49,0)	100	79,25-89,25	350	8,7

Checking values in brackets

* 1 mm less control rod travel than col 2

2.81

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 HAN 10,8 a 1

5. Edition

En

PE 6 A 95 D 320 RS 2364 EP/RSV 350-1100 A8 B1070R
RS 2557 A8 B1127R

superseded 8.80
company MF-Hanomag
engine D 963 A1

**

Test cold-start device according to VDT-I-DAF 004, page 2.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 mm (from BDC)
(2,10-2,30)

Testoil-ISO 4113

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	13,5	13,5-13,8	0,3(0,6)	13,5	13,1-13,3	n 1100
	+0,1			+0,1		
350	6,7-6,9	1,4-2,0	0,3(0,5)	6,6-6,8	1,4- 2,0	n 350
500	- - - -	C, 4-5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca. 24	350	5,5	480	13,5-13,6
	x =	5,5					100	min. 19		
							350	5,9-6,1	400	13,8-14,2
ca. 57	12,5	1140-1150					435-495	= 2,0		
2a	4,0	1205-1235					600	0 - 1		
	1380	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min							
rev/min	cm ³ /1000 strokes			rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1100	134,0-136,0 (132,0-138,0)	1140-1150*		500	131,0-134,0 (129,0-136,0)	100	20-20,5 mm RW**		

Checking values in brackets

* 1 mm less control rod travel than col 2

2.81

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The numbers denote the sequence of the tests

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca.25	350	62	1100	13,5
	x = 5,5						100	min.19,0	480	13,5-13,7
							350	6,6-6,8	400	13,8-14,2
ca.57	12,5 = 1140-1150						490-550 = 2,0			
	4,0 = 1205-1235						600 = 1,0			
②a	1380 = 0,3-1,7									

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
1100	130,0-132,0 (128,0-134,0)	1140-1150*	500	126,5-129,5 (124,5-131,5)	100	20-20,5 mm RW**			

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
②a										

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 OMB 8,1c

1. Edition

En

PES 6 MW 100/720 RS 1012 RQV 425-1000 MW 36-1
0 403 446 133

supersedes
company: OM Brescia
engine: 8365.25.530
121,5 kW (165 PS)

1 - 5 - 3 - 6 - 2 - 4
0 -60 -120-180-240-300 ± 0,5 (0.75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,90-3,00 \\ (2,85-3,05) \end{matrix}$ mm (from BDC) | RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,7+0,1	9,1 - 9,3	0,35(0,6)			
425	6,4-6,5	1,55-1,75	0,35(0,55)			
700	12,6+0,1		0,5 (0,7)			
500	11,5+0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca.26	425	5,4-6,5		
	1200	0 - 1,0					100	min.8,0		
ca.51	10,7	1040-1050					490-550=	2,0		
	4,0	1120-1150				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9 +0,1
LDA	0,6 bar	1040-1050*	LDA	0,6 bar	100	19,0 - 21,0 RW	500	12,5
1000	91,0-93,0 (89,0-95,0)		700	102,0-104,0 (99,0-106,0)			700	12,6
							800	12,4
			LDA	0 bar				
			500	71,5-73,5 (69,5-75,5)		160,0-180,0	950	11,7
							1000	11,7

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

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D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n = 500

rev/min

pressure - in bar gauge pressure

OMB 8,1 c

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
RS 1012 with RQV-MW 36-1	0,36	0,6 0 0,31	12,2 - 12,3 12,6 - 12,7 11,5 - 11,6 11,8 - 11,9

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test Specifications

Fuel Injection Pumps ① and Governors

WPP 001/4 OMB 8,1d

1. Edition

En

PES 6 MW 100/720 RS 1012 RQV 425-1100 MW 36
0 403 446 127

supersedes -
company: OM-Brescia
8365.25.580
engine: 129 kW(175 PS)

1 - 5 - 3 - 6 - 2 - 4
0 - 60-120-180-240-300 ± 0,5 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,90-3,00 mm (from BDC) 10,5 mm RW
(2,85-3,05)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,5+0,1	9,6-9,8	0,35(0,6)			
425	5,8-6,0	1,15-1,55	0,35(0,55)			
700	12,4+0,1		0,5 (0,7)			
500	11,2+0,1		0,35(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 14	425	5,8-6,0		
	1300	0- 1,0					100	min. 7,5		
ca. 49	10,5	1140-1150					470-530	=2,0		
	4,0	1185-1215				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA	0,5 bar		LDA	0,5 bar			700	12,4+0,1
1100	96,0-98,0 (94,0-100,0)	1140-1150*	700	101,0-105,0 (99,0-1,7,0)	100	RW max. 19 min. 70,0	1000	11,5+0,1
			LDA	0 bar				
			500	75,0-77,0 (73,0-79,0)	100-220 (80-240)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

OMB 8,1d

-2-

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1012 with RQV-MW 36	0,27		12,1 - 12,2
		0,2	11,5 - 11,7
		0,5	12,4 - 12,5
		0	11,2 - 11,3

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 6,1 k

3. Edition

En

PES 6 A 85 D 410/3 RS 2592 RQV 300-1250 AB 1089 L
Komb.-Nr. 0 400 836 026

supersedes 9.82
KHD
company:
engine BF 6 L 913

Test ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,9+0,1	9,1-9,2	0,3 (0,45)			
300	6,8-7,0	0,9-1,5	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1250	15,2-17,8	-	-	-	ca. 14	100 300	min. 8,4 6,8-7,0	250 550 900 1250	0,5-0,7 3,4-3,6 5,2-5,4 8,1
ca. 68	10,9 4,0 1500	1290-1300 1370-1400 0-1,0				325-500				

Torque control travel a = 0,40 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1250	0,7 bar 51,0-92,0 (89,0-94,0)	1290-1300*	LDA 800	0,7 bar 86,5-89,5 (84,0-92,0) 0 bar 62,5-65,5 (60,5-67,5)	100	110,0-120,0 (107,0-123,0)	1250 500 800 975	11,9+0 12,3+0 12,2+0 12,0+0

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

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D. Adjustment Test for Manifold Pressure Compensator

KHD 6,1 k

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 A..RS 2592 + AB 1089 L	0,7	0 0,40 0,28	12,2-12,3 10,8-10,9 12,0-12,1 11,3-11,5

Notes.

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 16,0 c 5

1. Edition

En

Testoil-ISO 4113

PE 10 A 95 D 520/5 LS 2501 RQV 250-1250 AB 1051 DR

supersedes

company MAN

D 2530 MTXF

engine 294 kW (400 PS)

 1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4
 0 - 27 - 72 - 99 - 144 - 171 - 216 - 243 - 288 - 315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke		mm (from BDC)		Cyl. 10		Spring pre-tensioning (torque-control valve)
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1250	12,3+0,1	12,5 - 12,6	0,3(0,6)			
250	5,9-6,1	1,5 - 2,1	0,3(0,5)			
750	12,3+0,1	C, col. 4-5	0,4(0,7)			
500	10,0+0,1					

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca. 50	1275	14,4-17,4	-	-	-	ca. 13	100	min. 7,5	200	0,7-0,8
ca. 48	11,5	1290-1300					250	5,9-6,1	550	4,3-4,6
	4,5	1365-1395					320-380=2,0mm		900	5,7-6,1
	1500	0 - 1,0					500 max. 1,0		1250	8,3
						3a				

Torque control travel a = 0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery		Rotational-speed		Fuel delivery characteristics		Starting fuel delivery		Torque-control	
Control-rod stop		limitation		high idle speed		idle		travel	
Test oil temp. 40°C (104°F)		intermediate speed				switching point			
rev/min	cm ³ /1000 strokes	rev/min	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
LDA	0,5 bar	1290-1300 *	LDA	0,5 bar	100	169,0-179,0	-	-	
1250	123,0-125,0		750	119,5-122,5					
	(121,0-127,0)			(117,5-124,5)					
			LDA	0 bar					
			500	76,5-79,5					
				(74,5-81,5)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.82

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D. Adjustment Test for Manifold Pressure Compensator

MAN 16,0 c 5

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE10A..LS2501 with..AB1051DR	0,5	0,29 0,21 0	12,3 - 12,4 11,6 - 11,9 10,5 - 10,7 10,0 - 10,1

Notes

(1) when n =

rev/min and
gauge pressure :

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 MAN 16,0 c 4

1. Edition

En

Testoil-ISO 4113

PE 10 A 95 D 520/5 LS 2501 RQV 250-1150 AB 1069 DR

supersedes -

company: MAN

engine: D 2530 MTX

265 kW (360 PS)

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4
0 -27 -72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{1,7}{(1,65-1,85)} - \frac{1,8}{(1,65-1,85)}$ mm (from BDC) Cyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,7+0,1	12,0 - 12,2	0,3(0,6)			
250	5,9-6,1	1,5 - 2,1	0,3(0,5)			
750	12,1+0,1	C, col. 4-5	0,4(0,7)			
500	9,9-10,0					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 12	100	min. 7,5	200	0,7-0,9
ca. 44	10,7 4,0 1400	1190-1200 1240-1270 0 - 1,0					250	5,9-6,1	520	3,8-4,0
							325-385	=2,0mm	830	5,2-5,5
							450	max. 1,0	1150	7,7

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min	cm³/1000 strokes	rev/min ④a	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1150	1,2 bar 118,5-120,5 (116,5-122,5)	1190-1200*	LDA 750	1,2 bar 118,5-121,5 (116,5-123,5)	100	169,0-179,0 16,7-17,3	1150	11,7+0,
			LDA 500	0 bar 78,0- 81,0 (76,0- 83,0)	250	mm RW RW 7,0 mm	500	12,1+0,
							825	11,9+0,
							975	11,7+0,

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.82

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D. Adjustment Test for Manifold Pressure Compensator

MAN 16,0 c 4

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE10A..LS2501 with ..AB1069DR	0,9		11,7 - 11,8
		0,33	11,5 - 11,6
		0,26	10,5 - 12,1
		0	9,9 - 10,0

Notes

(1) when n =

rev/min and
gauge pressure -

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

PE 8 A 95 D 410 LS 2609 RQV 300-1250 A B 1128 L

1-8-7-2-6-5-4-3 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

supersedes -

company: KHD

engine: BF 8 L 413 F
235 kW(320 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,0-2,1 \\ (1,95-2,15) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,5+0,1	11,5-11,7	0,3(0,6)			
300	6,4-6,6	1,1- 1,7	0,3(0,5)			
850	12,0+0,1					
500	10,2+0,1	C, Sp. 4+5				

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1250	15,2-17,8	-	-	-	ca. 15	100 300	min. 8,0 6,4-6,6	250 600	0,5-0,7 2,9-3,2
ca. 68	10,5 4,0 1450	1290-1300 1375-1395 0 - 1,0				3a		670-730=2,0mm	950 250	4,9-5,1 7,7

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1250	0,7 bar 113,5-115,5 (111,5-117,5)	1290-1300*	LDA 850	0,7 bar 118,0-121,0 (116,0-123,0)	100	129,0-139,0 15,2-15,6 mm RW	1250 500 1050	11,5+0,1 12,1+0,1 11,7+0,2
			LDA 500	0 bar 77,0-80,0 (75,0-82,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

KHD 1 e 5 -2-

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 8 A.. LS 2609 with.. AB 1128 L	0,7		12,0 - 12,1
		0	10,2 - 10,3
		0,43	11,7 - 11,8
		0,22	10,7 - 10,9

Notes

(1) when n =

rev/min and
gauge pressure =

bar (: maximum full-load control rod travel)

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 1 **40**
1. Edition

En

PE 12 A 95 D 610 LS 2453 RQV 300-1150 AB 1056 DL

1- 4- 9- 8- 5 - 2 - 11- 10- 3 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315° $\pm 0,5^\circ$
($\pm 0,75^\circ$)

supersedes -
company: KHD
engine: BF 12 L 413
272 kW (370 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,0-2,1 \\ (1,95-2,15) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,3+0,1	9,2-9,4	0,3(0,6)			
300	6,4-6,6	0,9-1,5	0,3(0,5)			
775	10,7+0,1	C, Col. 4-5	0,4(0,7)			
500	10,2+0,1					

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 14	100 300	min. 8,0 6,4-6,6	250 550 850 1150	0,2-0,8 2,8-3,2 4,7-5,0 7,9
ca. 66	9,3 4,0 1350	1190-1200 1240-1270 0 - 1,0				310-380 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 90,5-92,5 (88,5-94,5)	1190-1200*	LDA	0,7 bar 94,5-98,5 (92,5-100,5)	100	119,0-129,0 14,4- 14,6 mm RW	1150 500 775 930	10,3+0,1 10,7+0,1 10,7+0,1 10,5+0,2
			LDA 500	0 bar 76,5				

Checking values in brackets

* 1 mm less control rod travel than col. 2

J17

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1.82

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

KHD 1 b 3

-2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution, difference mm (1)
PE 12 A.. LS2453 with ..AB 1056 DL	0,7	0 0,33 0,28	10,7 - 10,8 10,2 - 10,3 10,6 - 10,7 10,4 - 10,6

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test Specifications

Fuel Injection Pumps (1)

and Governors

WPP 001/4 MB 8,7 m

1. Edition

En

PES 6 MW 100/720 RS 1101 RQV 300-1300 MW 34
0 403 446 124

1 - 5 - 3 - 6 - 2 - 4

0 -60 -120-180-240-300± 0,50 (0,75)

supersedes -

company: DB

engine OM 362 LA

141,0 kW (192 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,20-3,30}{(3,15-3,25)}$ mm (from BDC) RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,9±0,1	9,45-9,65	0,35(0,6)			
300	6,0±0,1	1,05-1,45	0,35(0,55)			
800	11,9±0,1		0,5 (0,7)			
500	10,2±0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1300	15,2-17,8				ca. 20	300	6,0-6,1		
	1600	0,1- 1,0					100	min. 7,6		
ca. 61	10,9	1340-1350					460-520	±2,0		
	4,0	1460-1490				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
LDA	0,7 bar		LDA	0,7 bar	100	80,0			
1300	94,5-96,5 (92,5-98,5)	1340-1350*	800	89,5-93,5 (87,5-95,5)					
			LDA	0 bar					
			500	54,5-56,5 (52,5-58,5)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.82

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Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n =

500

rev/min

- in bar gauge pressure

MB 8,7 m

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
RS 1101 with MW 34	0,38		11,4 - 11,5
		0,7	11,9 - 12,0
		0	10,2 - 10,3
		0,3	10,7 - 10,8

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ① and Governors

Testoil-ISO 4113

PES 6 A 95 D 410 LS 2542 RQV 250-1100 AB 850 DL
Komb.-Nr. 0 400 846 420

supersedes 10.83

company: MAN

engine: D 2566 M /MF
177 kW /2200 min⁻¹
MAN-Nr. 1-7943

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{1,5-1,6}{(1,45-1,65)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,0+0,1	12,5 - 12,7	0,3(0,6)			
250	5,9-6,1	0,9 - 1,4	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1100	15,2-17,8	-	-	-	ca. 13	100	min. 7,5	200	0,5-1,2
ca. 42	11,0	1140-1150					250	5,9-6,1	600	3,8-4,1
	4,0	1180-1210					325-385=2,0mm		1140	8,3
	1300	0 - 1,0				3a	450 max. 1,0			

Torque control travel a = 0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1100	124,5-126,5 (122,5-128,5)	1140-1150*	750	113,0-116,0 (110,5-118,5)	100	121,5-131,5 (118,5-134,5)	-	-
			500	107,5-113,5 (105,0-116,0)		= 14,0-14,6 mm RW		
					250	6,0 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1260	15,2-17,8	-	-	-	ca.12	100	min.7,5	200	0,7-0,9
ca.42	11,0 4,0 1400	1140-1150 1260-1290 0 - 1,0				(3a)	250	5,9-6,1	500	2,8-3,1
							320-380=2,0mm		800	5,2-5,5
									1100	7,2

Torque control travel a 0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1100	127,5-129,5 (125,5-131,5)	1140-1150*	500	min.113,5	100	14,0-14,6 mm RW	-	-
					250	6,0		
					100-	170(80-190)		

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
						(3a)				

Torque control travel a - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 BUK 1,5c

1. Edition

En

VE 3/10 F 1800 L 70

0 460 403 004

Overflow temperature 45° C

 superseded
 company: Bukh
 engine: DV 36 TME

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1200	2,9-3,3 mm	0,67	
1.2 Supply-pump pressure	1200	5,1-5,7 bar (kgf/cm ²)	0,67	
1.3 Full-load delivery with charge-air pressure	600	31,0-33,0 cm ³ /1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1200	46,0-48,0 cm ³ /1000 strokes	0,67	
1.4 Idle regulation	450	5,5-9,5 cm ³ /1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min.35,0 cm ³ /1000 strokes	0	
1.6 Start	1850	20,0-26,0 cm ³ /1000 strokes	0,67	
1.7 Load-dependent port-closing	-	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	900 1,1-1,9(0,8-2,2)	1200 (2,4-3,8)	1600 5,0-5,8(4,7-6,1)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	200 0,8-1,4		1800 8,0-8,6
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1800 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	max. 2000	0	0,67
	1900	2,0-8,0 (1,0-9,0)	0,67
	1850	(19,0-27,0)	0,67
	1700	44,5-45,5 (42,7-47,3)	0,67
	1200	(44,7-49,3)	0,67
	+600	35,5-37,5 (33,5-39,5)	0,27
	600	(29,0-35,0)	0
switch-off	1800	0	
idle stop	480-530	0	0
	450	(3,5-11,5)	0
End stop	500	min.40,0	
	580	max.40,0	
2.4 Solenoid	cut-in voltage	min. 10,0 V	
		rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	--
KF	5,9-6,1
MS	0,7-0,9
SVS	max.4,2
X XK	10,2-22,2
X XL	12,5-15,8

Observations

 + LDA-stroke 4,0 mm
 Use adjusting nut
 (46) to correct.

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 MAN 3,7 c

1. Edition

En

VE 4/10 F 1500 R 57-1

0 460 404 014

Overflow temperature 45° C

supersedes -
company. MAN
engine: D 0224 ME

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0,2

mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1000	5,3-5,7 mm		
1.2 Supply-pump pressure	1000	5,5-6,1 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1000	61,5-62,5 cm ³ /1000 strokes		2,5(3,5)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	350	10,0-14,0 cm ³ /1000 strokes		2,5(3,5)
1.5 Full-speed regulation	100	min. 60,0 cm ³ /1000 strokes		
1.6 Start	1650	4,0-10,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 2,6-3,4(2,3-3,7)	1000 (4,8-6,2)	1400 7,8-8,6(7,5-8,9)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 3,6-4,2		1400 7,0-7,6
Overflow delivery	n = rev/min cm ³ /10 s	500 55-100(40-125)		1500 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)
End stop	1680-1740 1650 1550 1480 1000 600	0 (2,5-11,5) max. 60,0 68,5-71,5 (67,3-72,7) (59,3-64,7) 57,25-60,75 (55,6-62,4)	
switch-off	1500	0	
Idle stop	400-450 350	0 (7,5-16,5)	
End stop	400 470		
2.4 Solenoid	cut-in voltage	min. 20,0 V rated voltage 24V	

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,7-5,9
MS	1,1-1,3
SVS	max. 4,6
X XK	25,0-27,0
X XL	12,2-15,5

Observations
pushing electromagnet
24 V

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 SOF 2,5d

1. Edition

En

VE 4/9 F 2100 R 87

0 460 494 090

Overflow temperature 45° C

 supersedes
 company: Sofim
 engine: 8144.61

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1800	7,4-7,8 mm		
1.2 Supply-pump pressure	1800	6,3-6,9 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	2000	37,5-38,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	370	8,0-12,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 55,0 cm ³ /1000 strokes		
1.6 Start	2350	19,0-25,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	1800	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min min	400 1,8-2,8(1,6-2,0)	1800 (6,9-8,3)	2100 8,2-9,2(8,0-9,4)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,9-3,5		2100 6,9-7,5
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2100 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2500 2350 2100 2000 1100 600	max. 6,0 (18,0-26,0) 36,7-39,3 (35,7-40,3) (35,7-40,3) 43,5-46,5 (42,7-47,3) 35,5-38,5 (34,0-40,0)	
switch-off	2100	0	
Idle stop	500 370	max. 6,0 (6,0-14,0)	
End stop	400 480		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	--
KF	5,4-5,6
MS	1,7-1,9
SVS	max. 2,7
XK	25,0-27,0
XL	8,9-12,3

Observations

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V
--------------	----------------	----------------------------------

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K1

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 3,8 g 2

1. Edition

En

PES 4 A 90 D 410 RS 2294 RQV 300-1425 AB 740 L

supersedes
Daimler-Benz
company OM 314
engine 62,5 kW (85 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,1 - 2,3)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	9,7-9,8	6,3-6,4	0,3(0,45)			
300	6,8-7,0	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel				
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	①a	Degree of deflection of control lever	rev/min	Control rod travel mm	④	Degree of deflection of control lever	rev/min	Control rod travel mm	③	rev/min	mm	①
1	2	3	2a	4	5	6		7	8	9		10	11	
max.	1425	16,0-19,4		-	-	-		ca. 10	100	min. 7,4		250	0,7-1,0	
ca. 61	8,7	1460-1470							300	5,8-6,0		640	3,2-3,6	
	4,0	1535-1565							590-650=2,0mm			1030	5,5-5,7	
	1650	0 - 1,0							750	max. 1,0		1425	8,1	
								③a						

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤a ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm³/1000 strokes 2	rev/min 3 ④a	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1400	62,5-63,5 (60,5-65,5)	1460-1470*	-	-	100	13,7-14,3 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.82

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①

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MWM8.8b

1. Edition

En

40

PE 8 A 100 D 320 RS 3018 EP/RZU 900A2/17 R

PE 8 A 100 D 300 RS 3019 - - -

supersedes -

company MWM

D 232-8

engine

1 - 8 - 5 - 4 - 7 - 2 - 3 - 6

0 - 30 - 90 - 120 - 180 - 210 - 270 - 300°

Test sequence overleaf!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0+0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,6 - 8,2	0,4			
	6	3,2 - 4,2				
	12	12,3 - 13,4				
200	9	3,4 - 4,6				

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
Full	900	14,0								
	950	8,2-8,9								
	1000	2,5-3,7								
	1020	1,0-1,6								
	1070	1,0								
						3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point	Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	9
880	76,5 - 77,5	925:2,3 mm less than column 2!	900	63,5-68,5			
							./.

Checking values in brackets

* 1 mm less control rod travel than col 2

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K3

K3

T e s t s e q u e n c e - EP/RZU - :

1. Basic setting of pump - Section A of test-specification sheet.
2. Basic setting of governor - Section B.
3. Speed regulation - Section C, Column 3.
4. Adjustm. of full-load del. - Sect.C, Column 1-2. -Establish contr.-rod travel.
5. Checking of breakaway - Section C, Column 3.
6. Check measurement, Section C, Column 4-5.

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 DAF 6,2 i
6. Edition

En

PE 6 A 90 D 320 RS 2547 RQ 250/1200 AB 1022 R
See Service Information
VDT-I-DAF 004

supersedes 5.81
company DAF
engine: DT 615
113 kW (153 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,20-2,30}{(2,15-2,35)}$ mm (from BDC) RW 9

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,8+0,1	1,7-7,2	0,3(0,45)			
250	6,9-7,1	1,1-1,5	0,2(0,4)			
600	9,8-10,0	C, col. 4-5	0,4(0,55)			
Port closing difference between control-rod travel 9 mm and max. 2,5° - 3,5° camshaft						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ①				Idle speed regulation Setting point ④				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	19,6-20,4	650	20,0	9,8	1245-1265	250	8,5	100	min. 10,0	-	-
VH=	4 9°			4,0	1340-1370			250	8,4-8,6		
				1500	0-1,0			405-	465=2,0		
								550	max. 1,0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation. At 1245-1265 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
LDA 1000	0,7 bar 71,0-72,0 (69,0-74,0)		LDA 600	0 bar 50,0-52,0 (48,0-54,0)	- 250	- 7,0

Checking values in brackets

Testo: -ISO 4113

rev/min $\begin{matrix} \text{decreasing} \\ \text{increasing} \end{matrix}$ pressure - in bar gauge pressure

-2-

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
..RS 2547 with RQ ..AB 1022 R	0,70	0,27 0,16 0	10,8-10,9 10,6-10,7 9,9-10,1 9,8-10,0

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 DAF 8,3 k
5. Edition

En

PE 6 A 95 D 410 RS 2525, Y, X RQ 225/1200 AB 1007 L

supersedes 8.80

company: DAF

engine: DN 825 (Y.X)

DHR 825

Test LDA and cold start in accordance with Service Information

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15)
2,00-2,10

mm (from BDC)

RW 9

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,6+0,1	10,8-11,0	0,3(0,6)			
225	5,7-5,9	0,7- 0,9	0,3(0,5)			
600	11,2+0,1	C, col.4-5	0,4(0,7)			
Port closing difference between control-rod travel 9 mm and max. 3,0 - 4,0° camshaft						

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4	Control rod travel mm 5	Test specifications rev/min 6		Control rod travel mm 8	Control rod travel mm 9	Control rod travel mm 10		Control rod travel mm 12	
650	19,2-20,8	650	20,0	11,6	1230-1245	225	5,8	100	min.7,2	-	-
VH= 49°				4,0 1450	1315-1345 0 - 1,0			225 340- 450	5,7-5,9 380=2,0 max.1,0		

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At 1230-1245 min⁻¹

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes/mm 7	Control rod travel mm
LDA 1000	0,7 bar 106,5-108,5 (104,5-110,5)			LDA 600	0 bar 77,5-80,5 (75,5-82,5)	100	19,0-21,0
X 1000	90,5-92,5	(12 mm RW		X 600	77,0-80,0		
Y 1000	99,0-101,0	(12,5 mm RW)		Y 600	77,0-80,0		

Checking values in brackets

2.82

D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n = rev/min decreasing pressure - in bar gauge pressure
increasing

DAF 8,3 k

Pump/governor	Setting	Measurement		Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm	(1)
PE 6 A ..RS 2525 with ..AB 1007 L	0,7	0,30 0,25 0	12,6-12,7 12,2-12,3 11,5-11,7 11,2-11,3	

Notes

(1) when n =

rev/min and
gauge pressure

bar (: maximum full-load control rod travel)

Testoil-ISO 4113

②

Test Specifications

Fuel Injection Pumps ②

and Governors

40

WPP 001/4 KHD 1 d 7

1. Edition

En

PE 6 A 95 D 410 LS 2621 RQ 300/1250 AB 1148 L

supersedes -

company: KHD

engine: F6L413F

1 - 6 - 5 - 4 - 3 - 2

0 -75 -120-195-240-315° ± 0,5° (± 0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{2,0-2,10}{(1,95-2,15)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,6-9,7	8,4-8,6	0,3(0,6)			
300	6,9-7,1	1,6-2,2	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3				Idle speed regulation Setting point rev/min 7				Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4	Control rod travel mm 5	Test specifications rev/min 6		Control rod travel mm 8	Control rod travel mm 9	Control rod travel mm 10		Control rod travel mm 12	
550	19,2-20,8	550	20,0	8,6 4,0	1295-1310 1325-1355	300	7,0	100 300 345- 450	min.8,5 6,9-7,1 385=2,0 max.1,0	1250 550 910 990	9,6- 9,7 10,1-10,2 9,9-10,1 9,6- 9,9
VH= 49°											

Torque-control travel on flyweight assembly dimension a = 0,25 mm

Speed regulation: 1295-1310 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min	cm ³ /-1000 strokes	rev/min	rev/min	cm ³ /-1000 strokes	rev/min	cm ³ /1000 strokes/mm
1	2	3	4	5	6	7
1250	82,5-84,5 (80,5-86,5)	600	800	85,0-88,0 (83,0-90,0)	100	119.0-129,0

Checking values in brackets

2.82

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K5

K9

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 REN 2, 0d

1. Edition

En

46

VE 4/9 F 2200 R 69

0 460 494 055

Overflow temperature 45° C

 supersedes Renault
 company: J 8 S - 702
 engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

see VDT-W-460/..

Pre-stroke setting

mm

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	4,4-4,8 mm	0,74	
1.2 Supply-pump pressure	1400	5,1-5,7 bar (kgf/cm ²)	0,74	
1.3 Full-load delivery with charge-air pressure	600	32,5-35,5 cm ³ /1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1400	49,0-50,0 cm ³ /1000 strokes	0,74	
1.4 Idle regulation	350	9,0-13,0 cm ³ /1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min. 60,0 cm ³ /1000 strokes	0	
1.6 Start	2400	23,0-29,0 cm ³ /1000 strokes	0,74	
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 2,2-3,0(1,9-3,3)	1400 (3,9-5,3)	1800 6,0-6,8(5,7-7,1)	2000 6,2-7,0(5,9-7,3)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 1,9-2,5		1800 6,3-6,9	
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2200 55-110(40-125)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2650-2750	0	0,74
	2500	max. 17,5	0,74
	2400	(22,0-30,0)	0,74
	2200	41,0-44,0 (40,2-44,8)	0,74
	2000	43,0-45,0 (41,7-46,3)	0,74
	1400	(47,2-51,8)	0,74
	1000	44,5-47,5 (43,7-48,3)	0,74
	700	37,5-40,5 (36,0-42,0)	0,2
	600	(31,0-37,0)	0
switch-off	2200		
idle stop	400-480	0	
	375	4,0-8,0 (2,0-10,0)	
	350	(7,0-15,0)	
End stop	180		
	250		
2.4 Solenoid	cut-in voltage	min. 10,0 V	
		rated voltage 12V	

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
SVS	max. 5,3
XK	20,2-22,2
XL	9,1-12,4
Observations	

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⑥

Test Specifications

Distributor-type Fuel-injection Pumps

WPP 001/4 VWV 1,6u

1. Edition

En

46

VE 4/9 F 2100 R 48

0 460 494 039

Overflow temperature 45° C

supersedes

company:

engine:

VWV

EA 162/1,6

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/.

Pre-stroke setting

mm

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,5-3,9 mm		
1.2 Supply-pump pressure	1500	4,8-5,4 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	33,0-34,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	415	3,0-7,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.40,0 cm ³ /1000 strokes		
1.6 Start	2300	12,0-18,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-2,5)	1500 (3,0-4,4)	2100 5,5-6,3(5,2-6,6)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,1-2,7		2100 6,3-6,9
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2100 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2450-2550 2400 2300 2100 1500 600	0 max. 6,0 (11,0-19,0) 28,2-30,2 (26,9-31,5) (31,2-35,8) 20,5-23,5 (19,0-25,0)	
switch-off	2100	0	
Idle stop	2000 450 415	max.3,0 min.2,0 (2,0-8,0)	
End stop	400 470		
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max.4,8
+FH	1,8-2,4
X XK	18,6-20,6
X XL	7,5-10,8

Observations

+ operating stroke
(cold-start accel.)

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K11

KAN

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

40

WPP 001/4 VWV 1,6t

1. Edition

En

VE 4/9 F 2100 R 48-2 (P)

0 460 494 102; 103

supersedes -

company: VWV

engine: Typ 2 USA

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

--

mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,5-3,9 mm		
1.2 Supply-pump pressure	1500	4,8-5,4 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	33,0-34,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	415	3,0-7,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.40,0 cm ³ /1000 strokes		
1.6 Start	2300	10,0-18,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-2,5)	1500 (3,0-4,4)	2100 5,5-6,3(5,2-6,6)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,1-2,7		2100 6,3-6,9
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		2100 55.110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2450-2550 2400 2300 2100 1500 600	0 max. 6,0 (11,0-19,0) 28,2-30,2 (26,9-31,5) (31,2-35,8) 20,5-23,5 (19,0-25,0)	
switch-off	2100	0	
Idle stop	2000 450 415	max.3,0 min.2,0 (2,0-8,0)	
End stop	400 470		
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max.4,8
+FH	1,8-2,4
XK	18,6-20,6
XL	7,5-10,8

Observations

+ operating stroke
(cold-start accel.)

K12

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K12

⑥

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 IHC 6,6f

1. Edition

En

46

VE 6/12 F 1250 R 38-2 (P)

0 460 426 023; 024

Overflow temperature 45° C

Setting of the pointer at a stroke of 1 mm in
relation to outlet "A".

Nozzle-and-holder assembly 1 688 901 020

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

supersedes -

company: IHC

engine: DT 402/3994

Test Instructions and Test Equipment

see VDT-W-460/..

Pre-stroke setting

mm

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1000	3,5-4,1 mm		
1.2 Supply-pump pressure	1000	4,9-5,5 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1000	117,5-118,5 cm ³ /1000 strokes		2,5(4,5)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	500	15,0-21,0 cm ³ /1000 strokes		2,5(4,5)
1.5 Full-speed regulation	100	min. 90,0 cm ³ /1000 strokes		
1.6 Start	1300	71,0-79,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 1,3-2,1(1,0-2,4)	1000 (3,1-4,5)	1230 4,5-5,3(4,2-5,6)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 3,2-3,8		1230 5,5-6,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1250 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1380-1430 1300 1230 1000 700 500	0 (70,0-80,0) 111,0-114,0 (109,5-115,5) (115,0-121,0) 102,5-106,5 (101,5-107,5) 92,0- 96,0 (90,2- 97,8)	
switch-off	1250	0	
Idle stop	520-570 500	0 (13,0-23,0)	
End stop	260 380		
2.4 Solenoid	cut-in voltage		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,4-5,6
MS	0,6-0,8
SVS	max. 6,0
* XK	20,2-22,1
R XL	11,1-14,4

Observations

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K13

K13

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

En

46

WPP 001/4 IHC 6,6e

1. Edition

VE 6/12 F 1250 R 38-1 (P)

0 460 426 018; 019 Overflow temperature 45° C

Setting of the pointer at a stroke of 1 mm in relation to outlet "A". Nozzle-and-holder assembly 1 688 901 020

supersedes IHC
company: DT 358/520 B
engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,4 mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed/ rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1000	3,8-4,2 mm		
1.2 Supply-pump pressure	1000	4,9-5,5 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1000	94,5-95,5 cm ³ /1000 strokes		2,5(4,5)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	350	15,0-21,0 cm ³ /1000 strokes		2,5(4,5)
1.5 Full-speed regulation	100	min. 100,0 cm ³ /1000 strokes		
1.6 Start	1300	47,0-53,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 1,2-2,0(0,9-2,3)	1000 (3,7-4,7)	1250 4,5-5,2
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,7-3,3		1250 5,5-6,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1250 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)	3. Dimensions for assembly and adjustment mm
End stop	1350-1430 1300 1220 1000 700 500	0 (45,0-55,0) 87,5-90,5 (86,0-92,0) (92,0-98,0) 87,0-91,0 (86,0-92,0) 76,0-80,0 (74,2-81,8)		K -- KF 5,4-5,6 MS 0,8-1,0 SVS max. 6,8
switch-off	1250	0		A B
Idle stop	400-480 350	0 (13,0-23,0)		Observations
End stop	260 380			
2.4 Solenoid	cut-in voltage			

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K14

K 14

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

En

46

WPP 001/4 IHC 5,8s

1. Edition

VE 6/11 F 1250 R 56 (P)

0 460 416 010 011

Overflow temperature 45° C

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers
Nozzle-and-holder assembly

Pre-stroke setting

mm 1 688 901 020

supersedes

company:

engine:

Test instructions and Test Equipment

see VDT-W-460/.

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1000	5,0-5,4 mm		
1.2 Supply-pump pressure	800	4,0-4,6 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	900	82,0-83,0 cm ³ /1000 strokes		2,5(4,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	450	20,0-22,0 cm ³ /1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 85,0 cm ³ /1000 strokes		
1.6 Start	1330	31,0-37,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	400 1,0-1,8(0,7-2,1)	800 3,3-3,9(2,9-4,3)	1000 (4,5-5,9)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,2-2,8		1250 5,7-6,3
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1250 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1390-1440	0	
	1330	(29,5-38,5)	
	1300	43,0-49,0 (41,5-50,5)	
	1230	82,2-84,8 (80,8-86,2)	
	900	(79,8-85,2)	
	700	74,0-78,0 (73,3-78,7)	
	500	64,0-68,0 (62,6-69,4)	
switch-off	1250	0	
Idle stop	500-550	0	
	450	(17,5-26,5)	
End stop	280		
	360		
2.4 Solenoid	cut-in voltage	min. 10,0 V	
		rated voltage 12V	

3. Dimensionsfor assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	0,9-1,1
SVS	1,2-6,0
* XK	20,7-22,7
* XL	8,4-11,7

Observations

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K15

K15

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 IBE 4,0a

1. Edition

En

VE 4/12 F 1300 R 103

0 460 424 004

Overflow temperature 45° C

Nozzle-and-holder assembly 1 688 901 020

supersedes Iberica
company: T 4.236
engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1000	4,2-4,6 mm	0,75	
1.2 Supply-pump pressure	1000	5,5-6,1 bar (kgf/cm ²)	0,75	
1.3 Full-load delivery with charge-air pressure	500	63,5-67,5 cm ³ /1000 strokes	0	2,5(4,5)
Full-load delivery without charge-air pressure	1000	95,5-96,5 cm ³ /1000 strokes	0,75	
1.4 Idle regulation	300	6,0-12,0 cm ³ /1000 strokes	0	2,5(4,5)
1.5 Full-speed regulation	100	min. 70,0 cm ³ /1000 strokes	0,75	
1.6 Start	1400	65,0-71,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	500 0,7-1,5(0,4-1,8)	1000 (3,7-5,1)	1300 5,8-6,6(5,5-6,9)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 3,3-3,9		1300 6,7-7,3
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1300 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1580-1640	0	0,75
	1400	(63,0-73,0)	0,75
	1300	86,0-89,0 (84,5-90,5)	0,75
	1000	(93,0-99,0)	0,75
	700	80,5-84,5 (79,5-85,5)	0,3
	500	(61,75-69,25)	0
switch-off	1300	0	
Idle stop	370-430	0	
	300	(4,0-14,0)	
End stop	160		
	210		
2.4 Solenoid	cut-in voltage	min. 10,0V	
		rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	--
KF	5,1-5,3
MS	1,1-1,3
SVS	5,0
X XK	20,2-22,2
B XL	8,6-11,9

Observations

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K16

K16

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 IHC 6,6a

1. Edition

En

VE 6/12 F 1100 R 47

Overflow temperature 45° C

0 460 426 009

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers
Nozzle-and-holder assembly

supersedes

company: IHC

engine: DT 402/A 65

Test Instructions and Test Equipment

see VDT-W-460/..

Pre-stroke setting 0,2 mm 1 688 901 020

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	800	4,2-4,6 mm		
1.2 Supply-pump pressure	800	5,7-6,3 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	800	101,5-102,5 cm ³ /1000 strokes		2,5(4,5)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	375	20,0- 26,0 cm ³ /1000 strokes		2,5(4,5)
1.5 Full-speed regulation	100	min. 100,0 cm ³ /1000 strokes		
1.6 Start	1200	32,0-40,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	400 1,1-1,9(0,8-2,2)	800 (3,7-5,1)	1000 5,1-5,9(4,8-6,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 3,7-4,3		1000 6,5-7,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1100 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1240-1290 1200 1100 800 500	0 (31,0-41,0) 96,0-99,0 (94,5-100,5) (99,0-105,0) 86,5-91,5 (85,2- 92,8)	
switch-off	1100	0	
Idle stop	450-500 375	0 (18,0-28,0)	
End stop	420 480		
2.4 Solenoid	cut-in voltage		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	--
KF	5,4-5,6
MS	1,0-1,2
SVS	max. 6,0
AX	XK 10,2-22,2
XL	8,4-11,7

Observations

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⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 PER 5,8b3

1. Edition

En

VE 6/12 F 1300 L 73 Overflow temperature 45° C

0 460 426 020

Nozzle-and-holder assembly

1 688 901 020

supersedes—

company: Perkins

engine: T 6.354.4

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	600	2,9-3,5 mm	0,75	
1.2 Supply-pump pressure	600	3,4-4,0 bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	1000	90,5-94,5 cm³/1000 strokes	0	2,5(4,5)
Full-load delivery without charge-air pressure	1000	97,5-99,5 cm³/1000 strokes	0,75	
1.4 Idle regulation	300	26,0-34,0 cm³/1000 strokes	0	2,5(4,5)
1.5 Full-speed regulation	100	min. 100,0 cm³/1000 strokes	0	
1.6 Start	1550	2,0-10,0 cm³/1000 strokes	0,75	
1.7 Load-dependent port-closing	--	--		

2. Test Specifications checking values in brackets ()

2.1 Timing device	n = rev/min mm	400 0,7-1,5(0,4-1,8)	600 (2,5-3,9)	800 3,9-4,7(3,6-5,0)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,4-3,0		
Overflow delivery	n = rev/min cm³/10 s	500 55-110(40-125)		1300 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1550	(1,0-11,0)	0,75
	1480	42,0-50,0 (41,0-51,0)	0,75
	1300	89,5-93,5 (88,5-94,5)	0,75
	1000	(89,5-95,5)	0
	1000	(95,5-101,5)	0,75
	+700	90,5-95,5 (90,0-96,5)	0,32
	500	82,5-87,5 (81,25-83,75)	0
switch-off	1300	0	
Idle stop	360-420	0	
	300	(25,0-35,0)	
End stop	190	max. 85,0	
	360		
	420		

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,1-5,3
MS	1,1-1,3
SVS	max. 6,0
XK	20,2-22,2
XL	10,6-13,9

Observations

+ LDA-stroke 3,5 mm.
Use adjusting nut
(46) to correct.

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K18

K18

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 IHC 5,8 t

1. Edition

En

VE 6/12 F 1350 R64 Overflow temperature 45° C

0 460 426 016

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

supersedes -

company: IHC

engine: D 358/PC 11

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

Nozzle-and-holder assembly

1 688 901 020

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1100	5,0-5,4 mm		
1.2 Supply-pump pressure	1100	5,4-6,0 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1150	83,0-84,0 cm ³ /1000 strokes		2,5(4,5)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	500	14,5-20,5 cm ³ /1000 strokes		2,5(4,5)
1.5 Full-speed regulation	100	min. 100,0 cm ³ /1000 strokes		
1.6 Start	1450	9,0-17,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 1,6-2,4(1,3-2,7)	1100 (4,5-5,9)	1250 5,5-6,3(5,2-6,6)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,7-3,3		1350 6,3-6,9
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1350 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1460-1510	0	
	1450	9,0-17,0 (8,0-18,0)	
	1400	44,0-50,0 (42,0-52,0)	
	1300	79,5-82,5 (78,0-84,0)	
	1150	(80,5-86,5)	
	800	75,0-79,0 (74,0-80,0)	
	500	64,5-69,5 (63,25-70,75)	
switch-off	1350	0	
Idle stop	520-570	0	
	500	(12,5-22,5)	
End stop	250		
	350		
2.4 Solenoid	cut-in voltage	min. 10,0V	
		rated voltage 12V	

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,0-1,2
SVS	max. 6,0
XK	20,2-22,2
XL	15,8-19,8

Observations

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Test Specifications

Distributor-type

Fuel-injection Pumps

En

VE 4/11 F 1400 R 39 (Overflow temperature 45° C

0 460 414 001 002

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

supersedes-

company: Perkins

engine: 4.236 V

All test specifications are valid only for Bosch-Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

--

mm

Nozzle-and-holder assembly
1 688 901 020

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	800	2,0-2,6 mm		
1.2 Supply-pump pressure	800	4,8-5,4 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	800	66,5-67,5 cm ³ /1000 strokes		2,5(4,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	400	13,0-17,0 cm ³ /1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 75,0 cm ³ /1000 strokes		
1.6 Start	1500	43,0-49,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	500 0,7-1,5(0,4-1,8)	800 (1,6-3,0)	1400 3,9-4,5(3,5-4,9)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 3,7-4,3		1400 6,7-7,3
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1400 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1580 1500 1400 800 500	max. 17,0 (41,5-50,5) 65,0-68,0 (63,8-69,2) (64,3-69,7) 52,0-55,0 (50,1-56,9)	
switch-off	1400	0	
Idle stop	450 400	5,0-9,0 (10,5-19,5)	
End stop	-- --		
2.4 Solenoid	cut-in voltage		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,1-5,3
MS	1,2-1,4
SVS	max. 4,5
AX	XK
B _X	XL

Observations

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Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 PER 5,8b 4

1. Edition

En

VE 6/12 F 1300 L 73-1 Overflow temperature 45° C
 0 460 426 021
 Nozzle-and-holder assembly
 1 688 901 020

supersedes
 company: Perkins
 engine: T 6.354.4

All test specifications are valid only for Bosch-Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	600	2,9-3,5 mm	0,75	
1.2 Supply-pump pressure	600	3,4-4,0 bar (kgf/cm ²)	0,75	
1.3 Full-load delivery with charge-air pressure	1000	90,5-94,5 cm ³ /1000 strokes	0	2,5(4,5)
Full-load delivery without charge-air pressure	1000	97,5-99,5 cm ³ /1000 strokes	0,75	
1.4 Idle regulation	300	26,0-34,0 cm ³ /1000 strokes	0	2,5(4,5)
1.5 Full-speed regulation	100	min.100,0 cm ³ /1000 strokes	0	
1.6 Start	1550	2,0-10,0 cm ³ /1000 strokes	0,75	
1.7 Load-dependent port-closing	-	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	400 0,7-1,5(0,4-1,8)	600 (2,5-3,9)	800 3,9-4,7(3,6-5,0)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,4-3,0		
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1300 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1550	(1,0 -11,0)	0,75
	1480	42,0-50,0 (41,0-51,0)	0,75
	1300	89,5-93,5 (88,5-94,5)	0,75
	1000	(89,5-95,5)	0
	1000	(95,5-101,5)	0,75
	+700	90,5-95,5 (90,0-96,0)	0,32
	500	82,5-87,5 (81,25-83,75)	0
switch-off	1300	0	
Idle stop	360-420	0	
	300	(25,0-35,0)	
End stop	360		
	420		
2.4 Solenoid	cut-in voltage		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,1-5,3
MS	1,1-1,3
SVS	max.6,0
A XK	20,2-22,2
B XL	10,6-13,9
X	

Observations

without electrical
shutoff device
 + LDA-stroke 3,5 mm.
 Use adjusting nut
(46) to correct.

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K21

K22

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 IHC 6,6i

1. Edition

En

VE 6/12 F 1100 R 102 Overflow temperature 45° C
 0 460 426 025
 Nozzle-and-holder assembly
 1 688 901 020

supersedes IHC
 company: DT 402
 engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	600	3,4-3,8 mm	0,75	
1.2 Supply-pump pressure	600	5,0-5,6 bar (kgf/cm ²)	0,75	2,5(4,5)
1.3 Full-load delivery with charge-air pressure	600	80,5-83,5 cm ³ /1000 strokes	0	
Full-load delivery without charge-air pressure	800	99,0-100,0 cm ³ /1000 strokes	0,75	
1.4 Idle regulation	375	20,0-26,0 cm ³ /1000 strokes	0	2,5(4,5)
1.5 Full-speed regulation	100	min. 90,0 cm ³ /1000 strokes	0	
1.6 Start	1200	33,0-39,0 cm ³ /1000 strokes	0,75	
1.7 Load-dependent port-closing	-	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	400 1,2-2,0(0,9-2,3)	600 (2,9-4,3)	700 3,6-4,2(3,2-4,6)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 3,9-4,5		1100 7,0-7,6
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1100 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1220-1280	0	0,75
	1200	(31,0-41,0)	0,75
	1080	97,0-100,0 (95,5-101,5)	0,75
	800	(96,5-102,5)	0,75
	600	88,0- 91,0 (85,75-93,25)	0,2
	600	(78,25-85,75)	0
switch-off	1100	0	
Idle stop	420-500	0	
	375	(18,0-28,0)	
End stop	400		
	460		
2.4 Solenoid	cut-in voltage	min. 10,0 V	rated voltage 12V

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,6-5,8
MS	1,5-1,7
SVS	max. 6,0
x XK	20,2-22,2
xl XL	10,2-13,5

Observations

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K22

k 22

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 IHC 5,8s 1

1. Edition

En

VE 6/12 F 1100 R 52 (P)

0 460 426 011

Overflow temperature 45° C

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

supersedes -

company: IHC

engine: D 358/A 54

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2

mm Nozzle-and-holder assembly
1 688 901 020

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	700	4,5-4,9 mm	0,67	
1.2 Supply-pump pressure	700	5,7-6,3 bar (kgf/cm ²)	0,67	
1.3 Full-load delivery with charge-air pressure	500	73,0-77,0 cm ³ /1000 strokes	0	2,5(4,5)
Full-load delivery without charge-air pressure	800	94,0-95,0 cm ³ /1000 strokes	0,67	
1.4 Idle regulation	380	16,0-20,0 cm ³ /1000 strokes	0	2,5(4,5)
1.5 Full-speed regulation	100	min.100,0 cm ³ /1000 strokes	0	
1.6 Start	1200	16,0-24,0 cm ³ /1000 strokes	0,67	
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	400 1,7-2,5(1,4-2,8)	700 (4,0-5,4)	900 5,8-6,6(5,5-6,9)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 4,5-5,1		1100 6,9-7,5
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110(40-125)		1100 55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1220-1270	0	0,67
	1200	(15,0-25,0)	0,67
	1170	57,0-63,0 (55,0-65,0)	0,67
	1080	86,8-89,2 (85,0-91,0)	0,67
	800	(91,5-97,5)	0,67
	+500	83,0-86,0 (81,5-87,5)	0,3
	500	(71,2-78,8)	0
switch-off	1100	0	
Idle stop	440-490	0	
	380	(13,0-23,0)	
End stop	380	min.75,0	
	450	max.75,0	
2.4 Solenoid	cut-in voltage		

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,4-5,6
MS	1,3-1,5
SVS	max.6,0
K	20,2-22,2
K	10,2-13,5

Observations

+ LDA-stroke 4,5 mm
Use adjusting nut
(46) to correct.

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K23

K23

Test Specifications

Distributor-type

Fuel-injection Pumps

En

VE 6/11 F 1500 L 19-3

Overflow temperature 45° C

0 460 416 005

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

 supersedes Volvo
 company: MD 40 A (C)
 engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm \pm 0,02 (0,04) mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	4,0-4,4 mm		
1.2 Supply-pump pressure	1500	6,0-6,5 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1000	43,0-44,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	350	9,0-13,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.70,0 cm ³ /1000 strokes		
1.6 Start	1650	27,0-33,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,4-2,4(1,2-2,6)	1500 (3,5-4,9)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 2,5-3,0	1500 6,0-6,5
Overflow delivery	n = rev/min cm ³ /10 s	500 55-111(40-126)	1500 55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1800-1900 1750 1650 1500 1000 600	0 max.14,0 (26,0-34,0) 42,0-45,0 (41,2-45,8) (41,2-45,8) 30,5-33,5 (29,0-35,0)	
switch-off	1500	0	
Idle stop	420-480 350	0 (7,0-15,0)	
End stop	100 220	min.65 max.60	
2.4 Solenoid	cut-in voltage	min. 10 V rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	---
KF	5,9-6,1
MS	1,7-1,9
SVS	max.2,6
A	
B	

Observations

Test Specifications

Distributor-type

Fuel-injection Pumps

En

46

WPP 001/4 Vol 3,6b

1. Edition

VE 6/11 F 1500 L 19-1

Overflow temperature 45° C

0 460 416 003

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

supersedes Volvo
company: TMD 40 A
engine:

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm \pm 0,02 (0,04) mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	4,0-4,4 mm		
1.2 Supply-pump pressure	1500	6,0-6,5 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1000	54,5-55,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	350	9,0-13,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 80,0 cm ³ /1000 strokes		
1.6 Start	1600	32,0-38,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,6-2,6(1,4-2,8)	1500 (3,5-4,9)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 2,5-3,0	1500 6,0-6,5
Overflow delivery	n = rev/min cm ³ /10 s	500 55-111(40-126)	1500 55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1780-1880	0	
	1700	max. 18,0	
	1600	(31,0-39,0)	
	1450	54,0-57,0 (53,2-57,8)	
	1000	(52,7-57,3)	
	600	42,0-45,0 (40,5-46,5)	
switch-off	1500	0	
Idle stop	420-480	0	
	350	(7,0-15,0)	
2.4 Solenoid	cut-in voltage	min. 10 V	
		rated voltage 12 V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	--
KF	5,9-6,1
MS	1,7-1,9
SVS	max. 2,6
* XK	9,0-14,0
* XL	8,1-11,3

Observations

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4.82

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 Vol 3,6h

1. Edition

En

VE 6/11 F 1800 L 18-2

0 460 416 015

Overflow temperature 45° C

superseries

company:

engine:

Volvo

TD 40 A

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm \pm 0,02 (0,04)

see VDT-W-460/

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	2,7-3,1 mm	0,73	2,5(3,0)
1.2 Supply-pump pressure	1500	6,7-7,3 bar (kgf/cm ²)	0,73	
1.3 Full-load delivery with charge-air pressure	500	45,0-48,0 cm ³ /1000 strokes	0	
Full-load delivery without charge-air pressure	1500	62,5-63,5 cm ³ /1000 strokes	0,73	2,5(3,0)
1.4 Idle regulation	325	7,0-13,0 cm ³ /1000 strokes	0	
1.5 Full-speed regulation	100	max. 60,0 cm ³ /1000 strokes	0	
1.6 Start	2000	18,0-24,0 cm ³ /1000 strokes	0,73	
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1100 0,7-1,5(0,4-1,8)	1500 (2,2-3,6)	1800 3,7-4,5(3,4-4,8)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,4-3,0		1800 7,7-8,3
Overflow delivery	n = rev/min cm ³ /10 s	500 55-111(40-126)		1800 55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2100-2180	0	0,73
	2070	max. 6,0	0,73
	2000	(17,0-25,0)	0,73
	1800	56,7-59,3 (55,7-60,3)	0,73
	1500	(60,7-65,3)	0,73
	* 500	50,5-52,5 (48,5-54,5)	0,28
	500	45,0-48,0 (43,5-49,5)	0

switch-off

1800

0

Idle stop

430-500
325

0

(6,0-14,0)

2.4 Solenoid

cut-in voltage

min. 10 V

rated voltage 12V

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	--
KF	5,9-6,1
MS	1,2-1,4
SVS	max. 4,5
* XK	20,1-22,1
B X XL	10,4-16,4

Observations

+ LDA-stroke 4,0 mm
Use adjusting nut
(46) to correct.

Test Specifications

Distributor-type

Fuel-injection Pumps

En

46

WPP 001/4 VWV 1,5e

1. Edition

VE 4/9 F 1500 R 25-2

R 25-2 P

Overflow temperature 45° C

0 460 494 017

0 460 494 018

supersedes

company:

engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/...

Testoil-ISO 4113

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,5-3,9 mm		
1.2 Supply-pump pressure	1500	5,1-5,7 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1000	26,5-27,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	415	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.38,0 cm ³ /1000 strokes		
1.6 Start	1560	19,0-23,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,3-2,1(1,0-2,4)	1500 (3,0-4,4)
2.2 Supply pump	n = rev/min: bar (kgf/cm ²)	400 2,4-3,0	
Overflow delivery	n = rev/min cm ³ /10 s	500 55-111(40-126)	1500 55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1595-1640 1560 1500 1000 600	0 (17,0-25,0) 27,5-30,5 (26,7-31,3) (24,7-29,3) 21,0-25,0 (20,0-26,0)	
switch-off electr.	400	bei 2,5 V 0	
Idle stop	700 415	max. 2,0 (4,0-12,0)	
End stop	400 500	min.15,0 max.21,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max.3,6
* FH	1,8-2,4
A	9,0-14,0
B	10,4-15,6

Observations

+ operating stroke
(cold-start accel.)
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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VW 1,5 b1

1. Edition

En

VE 4/9 F 2500 R 16-3

R 16-3 P

Overflow temperature 45° C

supersedes

company:

engine:

VW

EA 086/10

0 460 494 028

0 460 494 029

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/..

Pre-stroke setting

mm

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,6-4,0 mm		
1.2 Supply-pump pressure	1500	4,0-4,6 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	29,9-30,9 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	475	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 39,0 cm ³ /1000 strokes		
1.6 Start	2670	13,5-19,5 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-2,5)	1500 (3,1-4,5)	2200 6,3-7,1(6,0-7,3)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 1,4-2,0		2200 5,9-6,5
Overflow delivery	n = rev/min cm ³ /10 s	500 55-111(40-126)		2500 55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2820 2670 2500 1500 600	max. 7,0 (12,5-20,5) 25,4-28,0 (24,4-29,0) (28,1-32,7) 17,9-20,9 (16,4-22,4)	
switch-off electr.	400	bei 2,5 V 0	
Idle stop	1200 650 475	max. 3,0 max. 4,0 (4,0-12,0)	
End stop	400 500	min. 18,0 max. 20,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max. 3,6
* FH	1,8-2,4
**	9,0-14,0
A	9,4-12,6
B	

Observations

- * Operating stroke
(cold-start accel.)
- ** Two piece control lever
XK = 18,6-20,6 mm
XL = 9,1-12,8 mm

Test Specifications

Distributor-type

Fuel-injection Pumps

En

46

WPP 001/4 VWV 1,5f

1. Edition

VE 4/9 F 1500 R 25-3

R 25-3 P

Overflow temperature 45° C

0 460 494 035

0 460 494 036

supersedes

company:

engine:

VWV

EA 086

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

--

mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,5-3,9 mm		
1.2 Supply-pump pressure	1500	5,4-6,0 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	28,5-29,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	415	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.38,0 cm ³ /1000 strokes		
1.6 Start	1550	20,0-24,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-2,5)	1500 (3,0-4,4)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,6-3,2	
Overflow delivery	n = rev/min cm ³ /10 s	500 55-111(40-126)	1500 55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1680 1610 1550 1500 600	0 max.8,0 (18,0-26,0) (26,7-31,3) 17,0-20,0 (15,5-21,5)	
switch-off electr.	400	bei 2,5 V 0	
Idle stop	450-550 415	0 (4,0-12,0)	
End stop	400 500	min.15,0 max.21,0	
2.4 Solenoid	cut-in voltage	10 V rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max.3,6
XK	19,5-21,5
XL	9,2-12,6
A	
B	

Observations

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Test Specifications

Distributor-type Fuel-injection Pumps

WPP 001/4 VWV 1,5c

1. Edition

En

VE 4/9 F 2000 R 25

R 25 P

Overflow temperature 45° C

0 460 494 010

0 460 494 011

supersedes

company:

engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/.

Pre-stroke setting

--

mm

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,5-3,9 mm		
1.2 Supply-pump pressure	1500	4,0-4,6 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	28,5-29,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	415	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 40,0 cm ³ /1000 strokes		
1.6 Start	2050	8,0-12,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,3-2,1(1,0-2,4)	1500 (3,0-4,4)	1800 4,5-5,3(4,2-5,6)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 1,4-2,0		2000 5,4-6,0
Overflow delivery	n = rev/min cm ³ /10 s	500 55-111(40-126)		2000 55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2060-2160 2050 2030 2000 1500 600	0 (6,0-14,0) 17,0-23,0 (16,0-24,0) 24,5-26,5 (23,2-27,8) (26,7-31,3) 17,0-20,0 (15,5-21,5)	
switch-off electr.	400	bei 2,5 V 0	
Idle stop	700 415	max. 2,0 (4,0-12,0)	
End stop	400 50	min. 15,0 max. 21,0	
2.4 Solenoid	cut-in voltage	min. 10 V rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max. 3,6
+FH	1,8-2,4
A	9,0-14,0
B	10,4-15,6

Observations

* operating stroke
(cold-start accel.)

⑥

Test Specifications

Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWV 1,5d

1. Edition

En

VE 4/9 F 1800 R 25-1

R 25-1 P Overflow temperature 45° C

0 460 494 012

0 460 494 013

^a superseded by
company: VWV
engine: EA 086

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

Pre-stroke setting

--

mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,5-3,9 mm		
1.2 Supply-pump pressure	1500	4,0-4,6 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	28,5-29,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	415	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 40,0 cm ³ /1000 strokes		
1.6 Start	1900	4,0-10,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,3-2,1(1,0-2,4)	1500 (3,0-4,4)	1800 4,6-5,4(4,3-5,7)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 1,4-2,0		1800 4,8-5,4
Overflow delivery	n = rev/min cm ³ /10 s	500 55-111(40-126)		1800 55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1900 1800 1500 600	(3,0-11,0) 26,0-29,0 (25,2-29,8) (26,7-31,3) 16,5-20,5 (15,5-21,5)	
switch-off electr.	400	bei 2,5 V 0	
Idle stop	700 415	max. 2,0 (4,0-12,0)	
End stop	400 500	min. 15,0 max. 21,0	
2.4 Solenoid	cut-in voltage	min 10 V rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max. 3,6
*FH	1,8-2,4
A	9,0-14,0
B	10,4-15,6

Observations

* operating stroke
(cold-start accel.)

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L7

L71

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 VW 1,5a1

1. Edition

En

VE 4/9 F 2500 R 16
R 16 P

Overflow temperature 45° C

0 460 494 002
0 460 494 003supersedes
company:
engine:VW
EA 086/10

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,6-4,0 mm		
1.2 Supply-pump pressure	1500	4,0-4,6 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	29,9-30,9 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	415	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 39,0 cm ³ /1000 strokes		
1.6 Start	2670	13,5-19,5 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-2,5)	1500 (3,1-4,5)	2000 6,3-7,1(6,0-7,4)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 1,4-2,0		2200 5,9-6,5
Overflow delivery	n = rev/min cm ³ /10 s	500 55-111(40-126)		2500 55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2800 2670 2500 1500 600	max. 7,0 (12,5-20,5) 25,7-27,7 (24,4-29,0) (28,1-32,7) 17,9-20,9 (15,4-22,4)	
switch-off electr.	400	bei 2,5 V 0	
Idle stop	1200 415	max. 3,0 (4,0-12,0)	
End stop	400 500	min. 18,0 max. 20,0	
2.4 Solenoid	cut-in voltage	min. 10 V rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max. 3,6
* FH	1,8-2,4
**	9,0-14,0
A	9,4-12,0
B	

Observations

- * Operating stroke (cold-start accel.)
- ** Two piece control lever
XK = 18,6-20,6 mm
XL = 9,1-12,8 mm

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VW 1,6n

1. Edition

En

46

VE 4/9 F 2500 R 16-5

R 16-5 P

Overflow temperature 45° C

supersedes VW

company: 1,6 L

engine:

0 460 494 032

0 460 494 033

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

--

mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	4,8-5,2 mm		
1.2 Supply-pump pressure	1500	4,5-5,1 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	32,0-33,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	415	6,5-10,5 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 35,0 cm ³ /1000 strokes		
1.6 Start	2450	14,0-20,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 2,5-3,4(2,2-3,6)	1500 (4,3-5,7)	2100 7,0-7,8(6,7-8,1)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 1,7-2,3		2250 6,3-6,9
Overflow delivery	n = rev/min cm ³ /10 s	500 55-111(40-126)		55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2540 2450 2250 1500 600	5,0-13,0 (13,0-21,0) 27,8-30,8 (27,0-31,6) (30,2-34,8) 21,0-24,0 (19,5-25,5)	
switch-off electr.	400	bei 2,5 V 0	
Idle stop	1200 600 415	max. 4,0 max. 6,0 (4,5-12,5)	
End stop	400 50	min. 20,0 max. 22,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max. 4,8
* FH	1,8-2,4
XK	18,6-20,6
XL	9,1-12,8

Observations

* operating stroke
(cold-start accel.)

2.4 Solenoid	cut-in voltage min. 10 V rated voltage 12V
--------------	---

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⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

En

WPP 001/4 VWV 1,5a

1. Edition

46

VE 4/9 F 2500 R 16-2

R 16-2 P Overflow temperature 45° C

0 460 494 006

0 460 494 007

supersedes

company:

engine:

VW

EA 086/10

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,6-4,0 mm		
1.2 Supply-pump pressure	1500	4,0-4,6 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	29,9-30,9 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	415	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 39,0 cm ³ /1000 strokes		
1.6 Start	2670	13,5-19,5 cm ³ /1000 strokes		
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-2,5)	1500 (3,1-4,5)	2000 6,3-7,1(6,0-7,4)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 1,4-2,0		2200 5,9-6,5
Overflow delivery	n = rev/min cm ³ /10 s	500 55-111(40-126)		2500 55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2800 2670 2500 1500 600	max. 7,0 (12,5-20,5) 25,7-27,7 (24,4-29,0) (28,1-32,7) 17,9-20,9 (16,4-22,4)	
switch-off electr.	400	bei 2,5 V 0	
Idle stop	1200 415	max. 3,0 (4,0-12,0)	
End stop	400 500	min. 18,0 max. 20,0	
2.4 Solenoid	cut-in voltage	min. 10 V rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max. 3,6
* FH	1,8-2,4
**	9,0-14,0
A	9,4-12,0
B	
Observations	
* Operating stroke (cold-start accel.)	
** Two piece control lever	
XK = 18,6-20,6 mm	
XL = 9,1-12,8 mm	

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L-10

L10

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VWV 1,5b

1. Edition

En

VE 4/9 F 2500 R 16-4 (P)

0 460 494 030 (031)

supersedes

company:

engine:

VW

EA C86/10

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

--

mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,6-4,0 mm		
1.2 Supply-pump pressure	1500	4,0-4,6 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	29,9-30,9 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	475	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 39,0 cm ³ /1000 strokes		
1.6 Start	2670	13,5-19,5 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,4-2,2(1,1-2,5)	1500 (3,1-4,5)	2200 6,3-7,1(6,0-7,3)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 1,4-2,0		2200 5,9-6,5
Overflow delivery	n = rev/min cm ³ /10 s	500 55-111(40-126)		2500 55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2820 2670 2500 1500 600	max. 7,0 (12,5-20,5) 25,4-28,0 (24,4-29,0) (28,1-32,7) 17,9-20,9 (16,4-22,4)	
switch-off electr.	400	bei 2,5 V 0	
Idle stop	1200 650 475	max. 3,0 max. 4,0 (4,0-12,0)	
End stop	400 500	min. 18,0 max. 20,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max. 3,6
*FH	1,8-2,4
**	9,0-14,0
A	9,4-12,6
B	

Observations

- * Operating stroke
(cold-start accel.)
- ** Two piece control lever
XK = 18,6-20,6 mm
XL = 9,1-12,8 mm

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 OPE 2,0 b

1. Edition

En

46

VE 4/9 F 2200 L 28
L 28 P

0 460 494 009

0 460 494 015

Overflow temperature 45° C

supersedes

company:

engine:

Ope1

TL 0129

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,18 mm \pm 0,02 (0,04) mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	2000	6,1-6,7 mm		
1.2 Supply-pump pressure	2000	6,2-6,8 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1000	35,0-36,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	250	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 50,0 cm ³ /1000 strokes		
1.6 Start	2420	12,0-18,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	2000	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1200 2,3-3,3(2,1-3,5)	2000 (5,7-7,1)	2200 6,8-7,8(6,6-8,0)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,4-3,0		2200 6,7-7,3
Overflow delivery	n = rev/min cm ³ /10 s	500 55-111(40-126)		2200 55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2500 2450 2230 1000 600	max. 6,0 (11,0-19,0) 31,7-35,3 (31,2-35,8) (32,3-37,8) 30,0-34,0 (29,0-35,0)	
switch-off	400 70	0	
Idle stop	370-470 250	0 (4,0-12,0)	
2.4 Solenoid	cut-in voltage	10 V	
		rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	--
KF	5,7-5,9
MS	1,7-1,9
SVS	max. 4,2
A	2,6-7,6
B	10,4-15,6

Observations

Clearance between idle
position and stop for
increased idling
0,5-1,0 mm.

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L12

L12

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 OPE 2,0 b2

1. Edition

En

VE 4/9 F 2100 L 28-2
L 28-2 Psupersedes Opel
company: TL 1029-2 1
engine:0 460 494 060
0 460 494 061

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

Pre-stroke setting 0,18 mm \pm 0,02 (0,04) mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	2000	5,7-6,3 mm		
1.2 Supply-pump pressure	2000	6,2-6,8 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1000	35,5-36,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	250	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 50,0 cm ³ /1000 strokes		
1.6 Start	2420	12,0-18,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	2000	--		

2. Test Specifications		checking values in brackets ()			
2.1 Timing device	n = rev/min	1200	2000	2200	
	mm	2,3-3,2(2,1-3,5)	(5,3-6,7)	6,8-7,8(6,6-8,0)	
2.2 Supply pump	n = rev/min	400		2200	
	bar (kgf/cm²)	2,4-3,0		6,7-7,3	
Overflow delivery	n = rev/min	500		2100	
	cm³/10 s	55-111(40-126)		55-111(40-126)	
2.3 Fuel deliveries				3. Dimensions for assembly and adjustment mm	
Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)		
End stop	2500	max. 6,0		K	--
	2420	(11,0-19,0)		KF	5,7-5,9
	2230	31,2-34,8 (30,7-35,3)		MS	1,7-1,9
	1000	(33,7-38,3)		SVS	max. 4,2
	600	30,0-34,0 (29,0-35,0)			
switch-off electr.	400			A	2,6-7,6
	70	0		B	10,4-15,6
Idle stop	370-470	0		Observations	
	250	(4,0-12,0)			
2.4 Solenoid	cut-in voltage min. 10 V rated voltage 12V				

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L13

L13

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 OPE 2,1c

1. Edition

En

VE 4/9 F 2200 L 12

0 460 494 001

supersedes

Ope1

company:

TL 1755

engine:

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	2000	7,5-7,9 mm		
1.2 Supply-pump pressure	2000	6,3-7,3 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1250	37,0-38,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	300	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	50	min. 45.0 cm ³ /1000 strokes		
1.6 Start	2420	11,0-17,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	600 0,8-1,6(0,5-1,9)	1250 3,8-4,6(3,5-4,9)	2000 (7,0-8,4)	2200 7,8-8,6(7,5-8,9)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 2,7-3,7	2000 6,3-7,3		
Overflow delivery	n = rev/min cm ³ /10 s	500 55-111(40-126)	2200 55-111(40-126)		

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2620-2750 2500 2420 2230 1250 600	0 max. 6,0 (10,0-18,0) 30,0-32,5 (28,95-33,55) (35,2-39,8) 29,5-32,5 (28,0-34,0)	
switch-off	2000	0	
Idle stop	380-460 300	0 (4,0-12,0)	
2.4 Solenoid	cut-in voltage	min. 10 V rated voltage 12V	

3. Dimensionsfor assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
SVS	max. 4,8
A	2,6-7,6
B	10,4-15,6

Observations

Clearance between idle position and stop for increased idling 0,5-1,0 mm.

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L14

L14

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 OPE 2,0 b1

1. Edition

En

VE 4/9 F 2200 L 28-1
L 28-1 P

0 460 494 025

0 460 494 026

Overflow temperature 45° C

supersedes

company:

engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,18 mm \pm 0,02 (0,04) mm

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	2000	6,1-6,7 mm		
1.2 Supply-pump pressure	2200	6,8-7,4 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1100	37,5-38,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	250	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 50,0 cm ³ /1000 strokes		
1.6 Start	2400	15,0-21,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	2000	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1250 2,9-3,9(2,7-4,1)	2000 (5,7-7,1)	2200 6,9-7,9(6,7-8,1)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,5-3,1		
Overflow delivery	n = rev/min cm ³ /10 s	500 55-111(40-126)	2200 55-111(40-126)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2500 2400 2230 1100 600	max. 6,0 (14,0-22,0) 31,5-35,5 (31,2-35,8) (35,7-40,3) 32,0-36,0 (31,0-37,0)	
switch-off	2200	0	
Idle stop	370-470 250	0 (4,0-12,0)	
2.4 Solenoid	cut-in voltage	min. 10 V rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	--
KF	5,7-5,9
MS	1,7-1,9
SVS	max. 3,6
XK	20,0-22,0
XL	10,8-14,6
X	
B X	

Observations

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L15

L15

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VOL 3,6 g

1. Edition

En

VE 6/11 F 1500 L 19-6

Overflow temperature 45° C

0 460 416 013

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

supersedes

company:

engine:

Volvo

T AMD 40-A

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm \pm 0,02 (0,04)

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1200	2,6-3,0 mm		
1.2 Supply-pump pressure	1200	4,7-5,3 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1400	69,5-70,5 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	350	17,0-23,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 70,0 cm ³ /1000 strokes		
1.6 Start	1550	37,0-43,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	800 1,1-1,9(0,8-2,2)	1200 (2,1-3,5)	1500 3,8-4,6(3,5-4,9)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 1,9-2,5		1500 5,7-6,3
Overflow delivery	n = rev/min cm ³ /10 s	500 55-111(40-126)		1500 55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1650 1550 1400 1200 600	max. 15,0 (36,0-44,0) (67,7-72,3) 67,0-69,0 (65,7-70,3) 53,5-58,5 (53,0-59,0)	
switch-off	1500	0	
Idle stop	500-580 350	0 (16,0-24,0)	
End stop	100-120 220	min. 70,0 max. 52,0	
2.4 Solenoid	cut-in voltage	min. 10 V rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	--
KF	5,9-6,1
MS	1,4-1,6
SVS	max. 2,3
Δ XK	18,7-20,7
Δ XL	7,8-11,1

Observations

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 OPE 2,1d

1. Edition

En

VE 4/9 F 2200 L 27

0 460 494 008

Overflow temperature 45° C

supersedes -

company: Opel

engine: TL 1755

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	2000	7,5-7,9 mm		
1.2 Supply-pump pressure	2000	6,2-6,8 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1250	36,0-37,0 cm ³ /1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	----	-- cm ³ /1000 strokes		
1.4 Idle regulation	250	6,0-10,0 cm ³ /1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.50,0 cm ³ /1000 strokes		
1.6 Start	2420	13,0-19,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	2000	--		

Testoil-ISO 4113

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	600	1250	2000
	mm	0,9-1,9(0,7-2,1)	3,8-4,6(3,5-4,9)	(7,0-8,4) 7,7-8,5(7,4-8,8)
2.2 Supply pump	n = rev/min	600		2200
	bar (kgf/cm ²)	3,0-3,6		6,7-7,3
Overflow delivery	n = rev/min	500		2200
	cm ³ /10 s	55-111(40-126)		55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2500 2450 2230 1250 600	max.6,0 (12,0-20,0) 30,7-33,3 (29,7-34,3) (34,2-38,8) 31,5-34,5 (30,0-36,0)	
switch-off electr.	70	bei 2,5 V 0	
Idle stop	370-470 250	0 (4,0-12,0)	
2.4 Solenoid	cut-in voltage	min. 10 V rated voltage 12V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,7-1,9
SVS	4,6
A	2,6-7,6
B	11,4-15,6

Observations

Clearance between idle
position and stop for
increased idling
0,5-1,0 mm.

BOSCH

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4.82

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 3,0a 1

1. Edition

En

VA 4/100 H 1600 BR 101

0 460 304 055

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

supersedes

company

engine

Renault

599-01/03

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test Instructions and Test Equipment

VDI-WPP 161/4 B

Pre-setting see reverse side

Pre-stroke setting 0,1 mm \pm 0,02 (\pm 0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings	Charge-air press kp/cm ²	Difference in delivery cm ³
1 1 Timing device travel	800	4,0-5,0 mm		
1 2 Supply pump pressure	800	4,3-4,8 kp/cm ²		
1 3 Full-load delivery without charge-air pressure	1000	53,5-54,5 cm ³ /1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm ³ /1000 strokes		
1 4 Idle speed regulation	300	7,0-13,0 cm ³ /1000 strokes		3,0
1 5 Start	100	mind. 76,0 cm ³ /1000 strokes		
1 6 Full-load speed regulation	1670	34,0-42,0 cm ³ /1000 strokes		

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	44-530 (370-560)	800	1450-1570
	mm	Start	(3,7-5,3)	13,7-14,4 (13,4-14,7)
2 2 Supply pump	rev/min		800	1500
	kp/cm ²		(4,1-5,0)	6,8-7,4 (6,6-7,6)
Overflow delivery	rev/min	500	1500	
	cm ³ /10 s	mind. 25	85-150 (70-165)	

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	Charge-air pressure kp/cm ²
End stop	Full	1750-1810 (1730-1830)	0	
		1750	max. 14,0	
		1670	(33,0-43,0)	
		1600	46,75-49,25 (45,75-50,25)	
		1000	(53,0-55,0)	
		500	48,75-50,25 (47,75-51,25)	
	Stop	1600	0	
Idle stop	Full	320-420 (300-440)	0	
		300	(6,0-14,0)	
		100	mind. 76,0	
		110-210		

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Testoil-ISO 4113

Angle to the stop-plate	Pre-setting dimensions
<p>Pump</p> <p>$\alpha = 25 \pm 4^\circ$</p> <p>$\beta = 40 \pm 8^\circ$</p> <p>$\gamma = 45 - 8^\circ$</p> <p>$\delta = 60 + 8^\circ$</p>	<p>Pump</p> <p>Dimension IV = - mm</p> <p>Dimension V = - mm</p>

Instructions on special adjustmentTest sequence

Drive the pump at 100 min^{-1} below rated speed and bleed the damping device. (On design 2 at the bleeding screw, on design 1 and 3 by loosening the damping bushing. Tighten the damping bushing again afterwards and with design 2 see that the center mark on the screw plug points upwards). Switch off the test bench.

Set camshaft projection of load stop to stop plate (dimension "a").

Set idle speed before full-load speed regulation

Set idle stop screw (dimension "c").

Screw back the stop screw of the load lever.

Limit the path of the stop bolt (dimension "b") (e.g. with setting gauge EFEP 429 - 1 687 970 019) and move up against load lever with hooked-in cylindrical helical coiled spring.

Set idle quantity at the control throttle.

(a)

Then position the speed lever so that it touches the idle stop.

(In doing this do not turn the control throttle, but, if necessary, adjust the speed lever after loosening the clamping screw on the link.

Set idle speed regulation.

(b)

Place the stop screw of the load lever against the lobe of the speed lever.

Remove the fixing for dimension "b".

Check the starting delivery.

(c)

Set the regulation at the max.-speed stop-screw.

(d)

Adjust full-load delivery. Correct by adjusting the delivery stop.

(e)

If full-load delivery has been changed, check (a), (b) and (d) again.

Tests according to section B.

(f)

Check fuel deliveries according to section C.

(g)

Check by measuring.

(h)

To do this limit dimension "b" again (see above) and move up against load lever with hooked-in cylindrical helical coiled spring. If necessary, correct delivery within the tolerance of dimension "b".

Then move speed lever up against idle stop screw and, if necessary, adjust the stop screw of the load lever.

Remove the fixing for dimension "b".

Carry out a stop check.

(i)

Damper check!

Check whether hole in rubber protection sleeve faces downwards.

Run pump at 100 min⁻¹ below rated speed.

Quickly move speed-control lever to idle position. Stop pin must move rapidly in direction of injected-quantity lever.

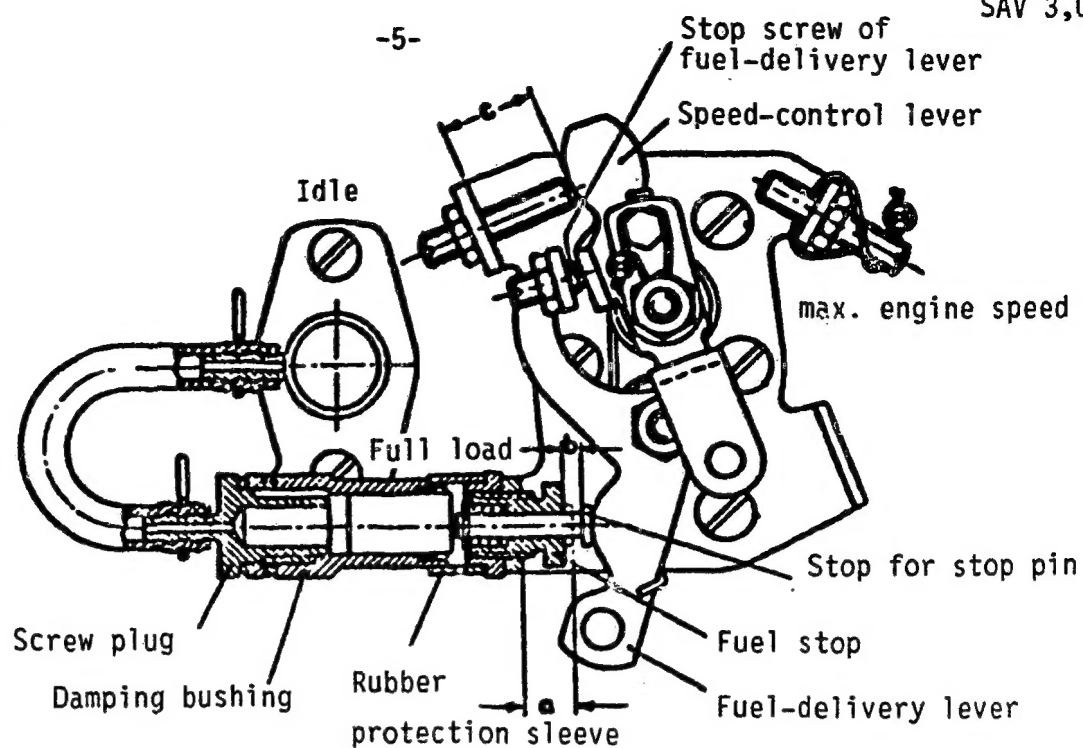
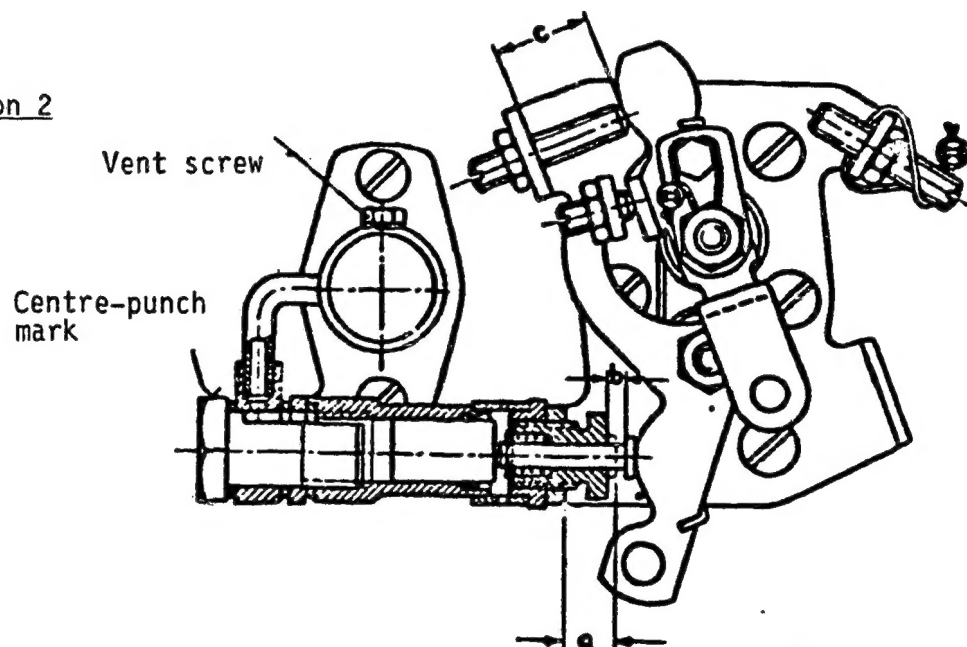
Move speed-control lever quickly to max. position. Within the stated time, the stop pin must be pressed against its mechanical stop by the injected-quantity lever. Leaks at the damper need not be taken into account; one droplet per minute is permissible.

Settings:

Dimension I = 7.0 mm "Retarded"
 Dimension II = 14.0 mm "Total"
 Dimension III = 35.8 mm "Spring inst."
 Dimension "a" = 10 ± mm

Dimension "b" = 3 ± 0.2 mm
 Dimension "c" = 14 ± 1 mm
 Running time against inj-quant.lever = 2-4 s

-5-

Version 1Version 2Version 3